Motion

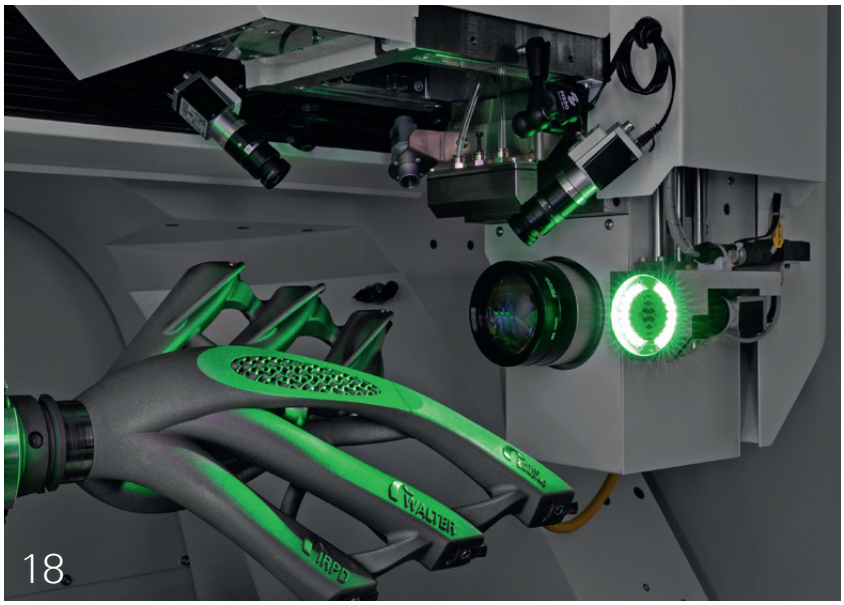
01.2025
The customer magazine of
UNITED MACHINING SOLUTIONS

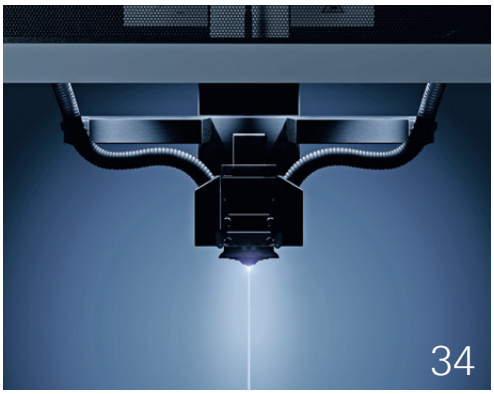
INTERVIEW How the new group is positioning itself for the future
IN DEPTH AGIE CHARMILLES uses Electrical Discharge Machining to shape the future
INTERNATIONAL Why Switzerland is considered the most innovative country in the world

UNITED
MACHINING SOLUTIONS

A NEW ERA

Find out everything about the new UNITED MACHINING SOLUTIONS Group and its two divisions, UNITED GRINDING and UNITED MACHINING, in this issue of “Motion”





IN THIS "MOTION" YOU WILL FIND:

3 **WELCOME**
CEO Stephan Nell on the new UNITED MACHINING SOLUTIONS Group and the opportunities it will bring

4 **INTERVIEW**
How is a new group formed? Stephan Nell speaks with Ivan Filisetti

12 **THE NEW GROUP AT A GLANCE**
15 brands, nine technologies, concentrated expertise: How UNITED MACHINING SOLUTIONS is put together

18 **TOOLS & TECHNOLOGY**
The new universal cylindrical grinding machine S23 from STUDER, a versatile 360-degree specialist from BLOHM, the Vision Laser from WALTER, innovative 5-axis laser production from CHARMILLES, the MIKRON MILL P 500 VHP, high flexibility with the three-axis manipulator T3-600 from SYSTEM 3R, and new standards with the CUT S series from AGIE CHARMILLES—numerous new products in the portfolio

32 **A LOOK INSIDE**
How CHARMILLES laser machines are working their way into the micrometer range

34 **IN DEPTH**
With the Electrical Discharge Machining process, AGIE CHARMILLES revolutionized the industry, and continues to drive future technologies

37 **INTERNATIONAL**
For the 14th time in a row, Switzerland has been voted the most innovative country in the world. What is its recipe for success?

40 **IDEAS**
When do we start talking about an innovation, and how do innovations emerge in an AI-driven future?

43 **IN TOUCH**
The "Motion" Calendar: Important trade shows and events

IMPRINT
PUBLISHER United Machining Solutions Management AG, Wankdorfallee 5, 3014 Bern **RESPONSIBLE** Michèle Fahrni
PROJECT MANAGEMENT Inke Myschker **EDITORIAL MANAGEMENT** Matthias Kriegel (V.i.S.d.P.) **EDITORIAL CONSULTANT** Michael Hopp
ART DIRECTION Nina Breindl **ACCOUNT MANAGER** Jutta Groen **IMAGE EDITING** Jan Steinhauer **AUTHORS** Michael Hopp, Markus Huth, Matthias Kriegel **LAYOUT** Lillian Peters, Claudia Homer **DISTRIBUTION** Wym Korff **DESIGN AND REALIZATION** Storyboard GmbH München/Hamburg **READER SERVICE** hamburg@storyboard.de **MANAGEMENT** Marie Bressem, Christine Fehenberger, Dr. Markus Schönmann **LITHO** Klambt PIXELcircus, Speyer **PRINTING** Walstead Kraków, Poland

Title: Oliver Oettli; Photos: ETH Zürich/Meinrad Schade, Oliver Oettli

"RARELY DO TWO COMPANIES COMPLEMENT EACH OTHER SO WELL."

Stephan Nell,
CEO, UNITED MACHINING SOLUTIONS

DEAR READERS,

2025 is a historic year for our Group. With the acquisition of GF Machining Solutions, one of the world's largest machine tool manufacturers has been formed, with total sales exceeding USD 1.5 billion and approximately 5,000 employees at over 50 global locations. Our technology know-how is now expanding with 15 brands: In addition to the existing areas of **surface and profile grinding, cylindrical grinding, tool machining, and additive manufacturing**, **Electrical Discharge Machining, laser technologies, milling, spindle manufacture, and automation** are now being added**.** We are thus laying the foundation for the challenges of the future. And from now on we will be operating under a new name: **UNITED MACHINING SOLUTIONS.**

In this special edition of "Motion", we will provide insight into the new Group's structure. **The cover motif originated during a visit to Biel.** Ivan Filisetti, President of GF MACHINING Solutions and associated with the company for 23 years, is responsible for the long-term vision of the new Group's technology sector and will remain CEO of **UNITED MACHINING.** Our exchange once again made clear to me our shared understanding of goals and values.

"Two companies, one passion" - that is the title of the interview during which I talk with Ivan Filisetti about our shared vision. The title also reflects the essence of our new Group. **Rarely do two companies complement each other so well, both in terms of product portfolio and corporate culture.**

An overview of the new Group can be found in the middle of the magazine, where we present all brands and technologies in a clear fold-out. Product news from all our 15 brands can be found in the TOOLS & TECHNOLOGY section. In IN DEPTH, we will look at one of the new technologies in detail: **In the 1950s, the AGIE CHARMILLES brand revolutionized the manufacturing industry with the EDM (Electrical Discharge Machining) process** – and still today, this technology continues to drive innovation. **This is just one example of the innovative spirit that characterizes our group – and which will continue to be closely linked to the success of our customers in the future.**

Stephan Nell,
CEO, UNITED MACHINING SOLUTIONS

TWO COMPANIES, ONE PASSION

What opportunities does the formation of UNITED MACHINING SOLUTIONS unlock? The UNITED GRINDING Group and GF Machining Solutions are creating a major player in the global market, with a presence in Asia, America and Europe, and close to customers everywhere – with customized technologies. But sheer size isn't the decisive factor, as **Stephan Nell** and **Ivan Filisetti** explain in this interview with "Motion".

Text: Michael Hopp — Photography: Oliver Oettli

Stephan Nell (right) and Ivan Filisetti in the production halls of UNITED MACHINING (before GF Machining Solutions)

In the interview with "Motion", Stephan Nell (right) and Ivan Filisetti look positively toward the future

Mr. Nell, Mr. Filisetti, with the formation of UNITED MACHINING SOLUTIONS you are setting out on a long journey together. How do you feel about that?

FILISETTI We at GF Machining Solutions feel extremely positive, mainly for three reasons: First, our products don't overlap but complement each other. This is extremely important, because it facilitates the integration between the two companies. Second, we are both Swiss companies, we share the same culture of precision and accuracy with a strong dedication to innovation. And third, we have a common understanding of what is important.

NELL All in all, I feel a bit like I am on a journey through time. We also used to belong to a larger group with different divisions. Our experience was that when we left that group, we could really focus on machine tools. And I hope that you will have the same experience. Now we can grow together, we can be a large international group, with the same mindset, as you said. We are now even more broadly positioned, remain competitive, and are better prepared for present and future challenges. I am sure that we will be very successful internationally and that we will make our customers even more successful – in line with our claim 'United For Your Success'.

"WE ARE COMMITTED TO MAKING INNOVATION PART OF OUR DAILY JOURNEY WITH OUR CUSTOMERS."

Ivan Filisetti

How long have you known each other personally? What was your first encounter?

FILISETTI We met each other seven years ago at the exhibition BI-MU in Italy. GF Machining Solutions was a customer of the UNITED GRINDING Group and we discussed operational topics related to a recent investment.

NELL I remember that we had a good connection right from the start and a lot in common, we talked about various topics. For example, things like: What is important to our customers?

FILISETTI During our first conversation, we emphasized the importance of supporting customers in all circumstances. In our business, mistakes can happen, but what truly matters is that we never leave our customers to face challenges alone. We stand by them until every issue is completely resolved. In fact, we've found that what begins as a 'mistake' can often be transformed into an opportunity for strengthening relationships and demonstrating our commitment to excellence.

Both of you seem to like what you do.

NELL Like? Love! If you start in machine tools, you have to love this business. Otherwise, you can't do it. It's a challenging business. You have a huge and fluctuating market. You must be a person that really loves the challenge. For me it's the most interesting industry one can work in. It's not just our products, it's also our customers. They are so different. And that is what makes the job so exciting. I am sure we are both here because we love the business.

FILISETTI Exactly! Stephan and I both started in the machine tool business, my original specialization is the mold and die business. And here's the thing: when you

brush your teeth in the morning, you know that the toothbrush was made with a mold that has probably been produced with one of our machines. Our technology touches your everyday life in ways you might not realize. When you drive your car, you're surrounded by components that were cast in molds created with our milling or EDM machines. And when you fly, the turbine blades and blisks powering the aircraft engine were likely manufactured using a LIECHTI machine and wire EDM technology. That is fascinating.

that is why we need a culture that is not purely Swiss. In the U.S., we have to be a U.S. company, in China we have to be a Chinese company. We have to understand the customer. Swissness yes, but if you look at the distribution of our products, we are an international company.

Do you see it the same way, Mr. Filisetti?

FILISETTI Swissness certainly represents significant value in terms of culture and attitude in our daily work, but today GF Machining Solutions is an international company characterized by the speed of our Chinese colleagues, the business orientation of our American teams, and the precision and attention to detail of our European team.

Lately, the European and German mechanical engineering sectors have come under some pressure. What significance can sheer size have in this situation?

NELL I wouldn't talk about sheer size, but about global reach. There are not many companies like us which really have a strong presence in Asia, in America, and

"COMPLIANCE WITH FORTHCOMING EU STANDARDS ENSURES THAT OUR MACHINES STAY FUTURE-PROOF."

Stephan Nell

Your products are essential for our daily lives.

NELL And it's a global business. You get familiar with different cultures all over the world. You learn more about a culture by doing business than by traveling as a tourist. And when you do business with a customer, it's a partnership for at least 20 years. It's very personal.

FILISETTI In our business, investments for a machine can go as high as 2.5 million euros and of course the customer wants to know who is behind the product that he buys. Our real work begins after machine installation. Customers frequently seek our application support and advice on optimizing their machining processes for efficiency and reliability. This creates a long-term partnership that typically spans many years.

How important is the "Swissness" in your DNA? Is there still demand for European values in a changing world?

NELL Why are the Swiss and German machine tool builders still so successful today? It has to do with the way we educate our apprentices. Made in Germany, made in Switzerland – this still has a value. Most of our people work in Switzerland. And we are Swiss owned. So "Swissness" transports our values, like quality and precision.

It works as a symbol as well.

NELL Yes. But on the other hand, we are an international group. The sales numbers show that Switzerland is not our main market. The big markets are elsewhere. And

Wide range of products, innovative technologies: Ivan Filisetti (right) shows Stephan Nell the production facilities of the new UNITED MACHINING division

"IT'S NOT JUST THE MACHINE – IT'S THE SUPPORT WE OFFER CUSTOMERS AND THE TAILORED SOLUTIONS WE'VE REFINED OVER DECADES."

Ivan Filisetti

in Europe and which are so close to their customers. It's about understanding each other – that means not only the language but also the culture of our customers. We are medium-sized companies combined in a group. I hope that we can maintain this spirit of a medium-sized company. Because size doesn't tell you whether a company is successful or not.

FILISETTI What is much more important than the size of the new company is the fact that we address our customers' problems with very efficient solutions. There are huge companies that produce very simple machines in very high volumes. For us, it is more important to have a multi-technology approach regarding high-end applications. This is where we play; it is not only about the machine itself, but also the continuous support and innovation we provide to our customers.

NELL We don't just sell machines but also know-how. So, we think about which of our machines is best suited for the job and set up the entire process. We don't just sell off the shelf – we deliver customized solutions.

Experts sometimes lament a lack of innovation in the industrial space. Does this also apply to your industry? Or to put it differently: How would you define innovation?

FILISETTI We must differentiate between innovation and the incremental improvement of a product. For me, innovation is 'a new invention', meaning something that was not available before! Continuous improvement is good, it is even necessary, don't get me wrong. But what really counts is something that didn't exist before that changes the paradigm for our customers, and brings them to another level of competitiveness; in German we call it 'Quantensprung'. In this regard, we can be proud of ourselves – we have at least ten kinds of developments accomplished in the past years that are still unique! This is the spirit we want to keep in the future: make a difference in the market with pure innovation.

NELL The way you think about innovation is in line with my own ideas. Progress requires continuous investment over years.

FILISETTI As a customer, I remember when STUDER introduced a real innovation in 1998. That year I was so proud to be the first to buy a STUDER S40, a cylindrical grinding machine with the first threading function available on the market. A pioneering achievement at the time! I think with this STUDER opened completely new possibilities in cylindrical grinding.

NELL It is very charming when Mr. Filisetti tells us that STUDER changed the world!

What strategies ensure that your machines meet both current and future needs?

NELL We future-proof our machines by adhering to tomorrow's European Union standards and regulations today. When a customer buys a machine, he or she can be sure that we will be able to meet the requirements in the future. Imagine buying a machine and then years down the line, being told that you can no longer use it because of new regulations or connectivity. That won't happen with our machines, we are prepared. The size of our new group helps, too. By harnessing our combined strengths, we are pioneering innovation and realizing the full potential of collaboration.

Another area that makes machines future-proof is sustainability.

FILISETTI In the last three years, we've worked hard to implement a meaningful sustainability program that brings real value to our customers. Our focus has been reducing energy consumption in our machines – including electricity and compressed air – while eliminating energy waste. To validate these efforts, customers who purchase our new products receive a certification documenting the energy savings. This can be up to 50% compared to the previous machine models. All measurements are conducted according to ISO standards.

Sustainability can be achieved at different levels…

FILISETTI Absolutely! For example, our plant in Biel achieved 90 percent carbon reduction by 2022 compared to the 2020

baseline. But again, it is also important to understand what benefits sustainability can bring to our customers! If you can produce a part in half the time, that is also a great achievement in terms of sustainability.

NELL The greatest contribution to sustainability lies in the machines themselves. With our machines the customer can produce faster, more accurately and efficiently. A good comparison is the diesel engine. The old diesel engine had 80 horsepower and consumed 15 to 20 liters of diesel. Now we have 200 horsepower, and the average consumption is four or five liters. This is good for the environment and would not be possible without modern machine tools. There are so many more examples. If you look at the cans used by soft drink manufacturers: They are made of very thin metal now. This is possible because machine tools like ours are capable of producing tools with high precision, and the use of these tools reduces the amount of sheet metal by half. And this has an impact.

Is precision still a domain where companies can carve out a competitive edge?

FILISETTI I'm not expecting that in precision we can achieve a quantum leap – we can always improve a little further, but there are physical limits. At this level, further enhancements would yield imperceptible gains. In my opinion, the critical focus lies in reliably maintaining this precision in a sustainable way – particularly within automated manufacturing processes.

How important are automation and digitalization?

FILISETTI First of all, when we talk about digitalization, we talk about tons of data. It's essential to recognize that many of our customers are not large corporations—we often serve niche businesses, typically teams of 10 to 12 highly specialized experts. These kinds of customers don't have time to check a lot of data. If we gave them a complex system with five screens and tons of data in charts, it wouldn't work. What's important for them is a reliable, predictable system with clear and limited key performance indicators.

NELL People are dreaming about the potential we might have in digitalization. But it is not a question of whether or not to invest in digitalization. We are simply doing it because it is necessary. But it is much more about what the customer needs. In the early days of digitalization, the industry did everything that was possible. Five screens showing everything that can be measured. But that is not the point. Where is the benefit? We always have to ask ourselves: What kind of digital or automation solution fits the specific customer's need? And then we tailor the system accordingly. If we are not providing value to our customers, they are not willing to pay for it.

Is there still untapped potential in customer service?

FILISETTI Of course, you can always improve Mean Time To Repair and Mean Time To Install – it's a continuous journey. But honestly, even maintaining the current level is challenging. Many highly skilled experts are nearing retirement, and their knowledge must be passed to the next generation. That's a major task: you invest today to see the payoff in three to five years.

NELL One might think that merging companies would allow us to cut costs when it comes to Customer Care. But that is not the case. The machines we produce are much too complex for that. When we send a technician to a customer, he or she must be an expert.

While many manufacturers of consumer goods pursue an umbrella brand strategy, you want to emphasize the well-known local brands. Why is this the more successful approach?

NELL Our brand companies have a long tradition and each brand stands for its technology. Many of our brand companies have more than 100 years of history in their business. This is a huge value we have to safeguard.

FILISETTI They are pioneers. That's worth a lot.

"THERE ARE ONLY TWO THINGS YOU CANNOT COPY IN A COMPANY: A MOTIVATED TEAM AND BRAND VALUE."

Stephan Nell

THE MANAGEMENT BOARD OF UNITED MACHINING SOLUTIONS

STEPHAN NELL
CEO of the UNITED GRINDING Group, who has been involved in the group for 22 years, takes over as Chairman of the Management Board and strategic leadership for Sales and Customer Care

IVAN FILISETTI
President of GF Machining Solutions and affiliated with the company for 23 years, is responsible for establishing the long-term vision of the new group's technology area and remains CEO of UNITED MACHINING

MICHAEL HORN
who is responsible for Operations and IT, brings his many years of experience in machine tool engineering and most recently as a member of the Board of DMG MORI AG to the new group

HEINZ POKLEKOWSKI
who has been a group member for 35 years, his most recent role being CFO for the UNITED GRINDING Group, will assume responsibility for Finance and Group Services

Stephan Nell and Ivan Filisetti in the welcoming reception area in Biel

How do you assess the mood among your people regarding this important strategic step?

FILISETTI I travel extensively to communicate our strategic vision and the opportunities it presents. With a global workforce, ensuring alignment and shared purpose across the organization is very important. A colleague once shared a poignant insight: 'What matters most is knowing the company will endure beyond my career.' This sentiment resonates deeply. I see it as my task to safeguard our long-term viability and legacy.

NELL Neither of us is directly involved in building or selling the machines. Every process, every innovation, is driven by our employees – they are the heartbeat of this organization and our most profound responsibility. There are only two things you cannot copy in a company: a motivated team and brand value. Buildings, machinery, and technology can be acquired, but not culture and tradition. In the machine tool industry, cyclicality is a given, but important is long-term success. And in five or ten years from now, when we meet again at this table, people will have decided whether we have done a good job.

FILISETTI This is very important. Daily operations can be optimized overnight, but long-term strategy requires unwavering focus. A clear vision isn't just essential; misalign it, and the journey ends before it begins.

The day after closing: What were the first steps? What was on the top of your agenda?

NELL Our first priority was clear communication with our employees. We held a live-streamed worldwide meeting to explain the situation in detail. As I emphasized earlier: The most important asset we have are our employees.

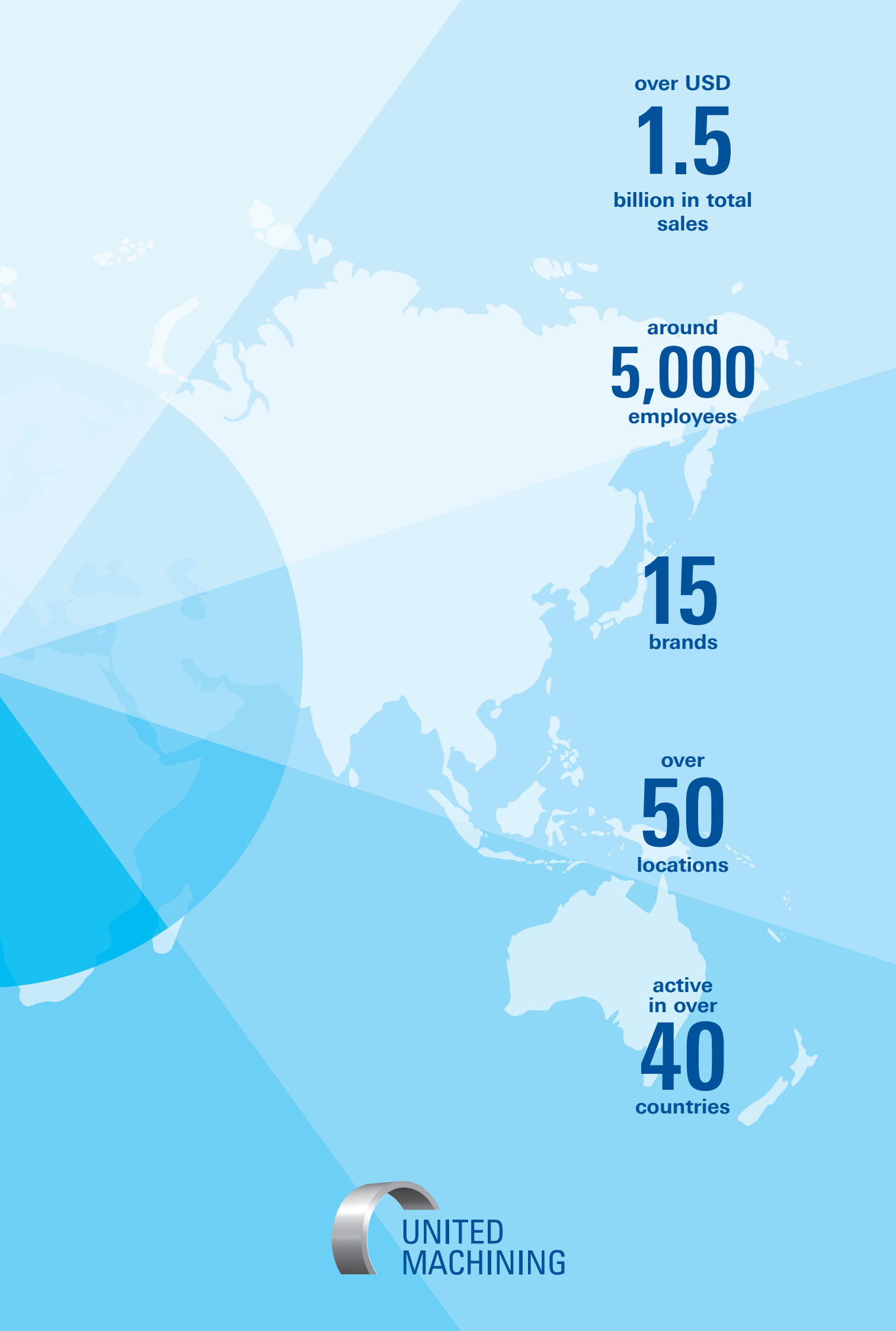
FILISETTI The day of the closure marked the final page of one chapter in the history of our company. It is crucial to establish a common mindset as we transition fully into UNITED MACHINING SOLUTIONS as UNITED MACHINING. Our path forward remains unwavering: we will focus on the market, on our customer's trust through quality, and deliver excellence without compromise. While synergies and collaborative advantages will naturally unfold, our priority is clear. We will sustain our market leadership and pursue our goals.

NELL For the majority of the people in the group, there won't be any changes. They have the same customers, they have the same goals. The real challenge is …

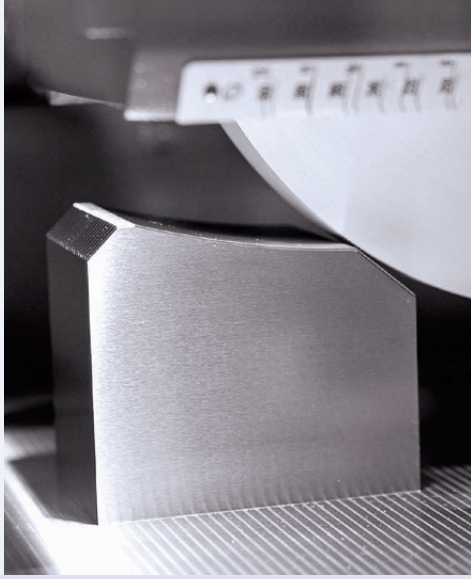
FILISETTI … is the market.

UNITED MACHINING SOLUTIONS

UNITED GRINDING


over USD
1.5
billion in total sales
around
5,000
employees
15
brands
over
50
locations
active in over
40
countries
UNITED MACHINING

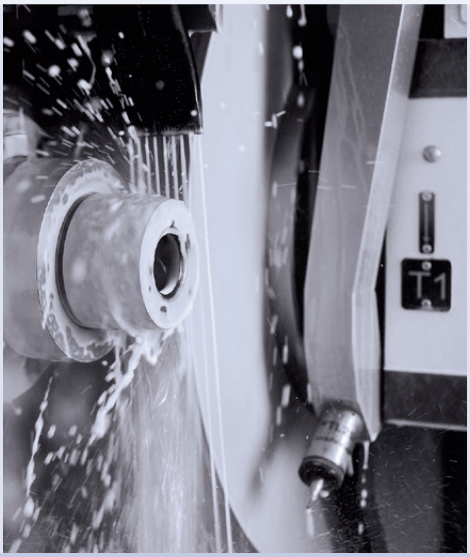
UNITED GRINDING



MÄGERLE

Founded in 1929
Headquarters Fehraltorf, Switzerland

MÄGERLE has been synonymous with high-end surface and profile grinding technology for decades. The product portfolio includes 5/6-axis grinding centers, surface and profile grinding machines, vertical grinding centers, and special grinding machines for large and very large workpieces.



STUDER

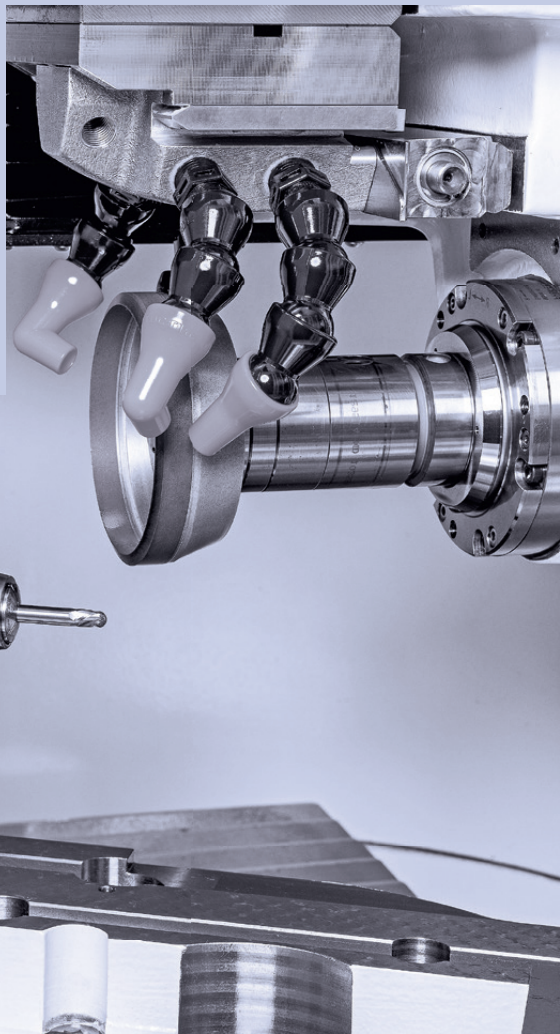
Founded in 1912
Headquarters Thun/Steffisburg, Switzerland

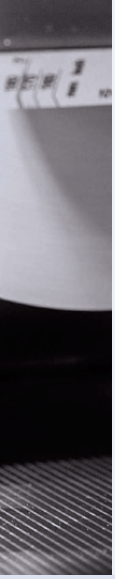
STUDER is one of the market and technology leaders for the development and manufacture of high-precision cylindrical grinding machines. The portfolio includes standard machines and individual system solutions in universal, external, internal, and out-of-round grinding for machining small and medium-sized workpieces.

WALTER

Founded in 1919
Headquarters Tübingen, Germany

WALTER develops and produces CNC machines for grinding and eroding, as well as for laser processing of metal, woodworking, PCD tools, and rotationally symmetrical production parts as well as optical CNC measuring machines.





BLOHM

Founded in 1924
Headquarters Hamburg, Germany

BLOHM offers a wide range of surface and profile grinding machines for efficient machining of demanding workpieces in small and large batch sizes.

JUNG

Founded in 1919
Headquarters Göppingen, Germany

JUNG is a traditional manufacturer of high-quality surface and profile grinding machines. The portfolio ranges from standardized solutions to customer-specific, fully automated production systems.

SCHAUDT

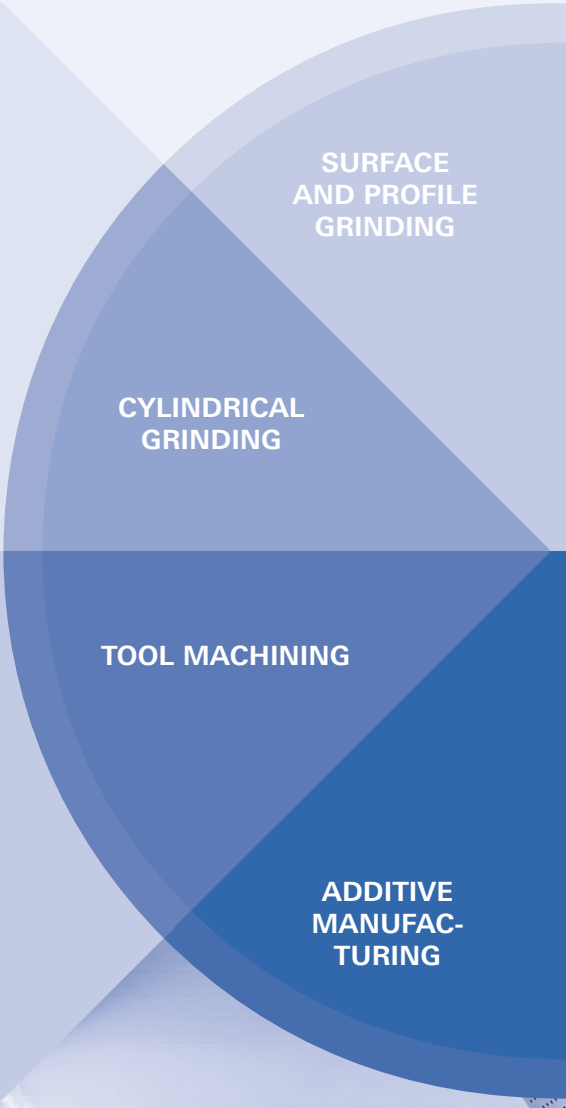
Founded in 1906
Headquarters Göppingen, Germany

SCHAUDT has supplied machines worldwide with state-of-the-art technological solutions for cylindrical, out-of-round, and cam form grinding for the efficient machining of crankshafts and cam shafts, transmission components, and other rotationally symmetrical workpieces.

MIKROSA

Founded in 1878
Headquarters Leipzig, Germany

For more than 130 years, MIKROSA has built centerless external cylindrical grinding machines tailored to the highest precision and reliability. The machines are designed for high quantities, tight tolerances, and economical series production.



EWAG

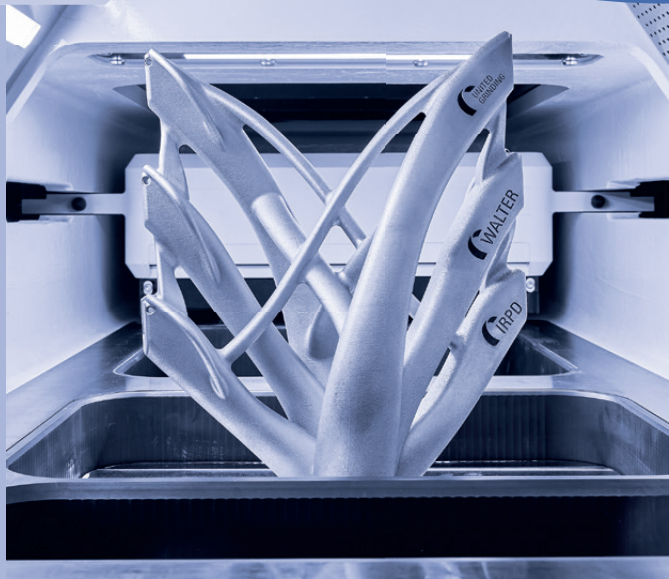
Founded in 1946
Headquarters Etziken, Switzerland

EWAG has its origins in the supply of precision tool machining machines for the Swiss watch industry. The brand stands for the highest surface finish, precision, and efficiency in machining the smallest tool geometries.

IRPD

Founded in 1996
Headquarters St. Gallen, Switzerland

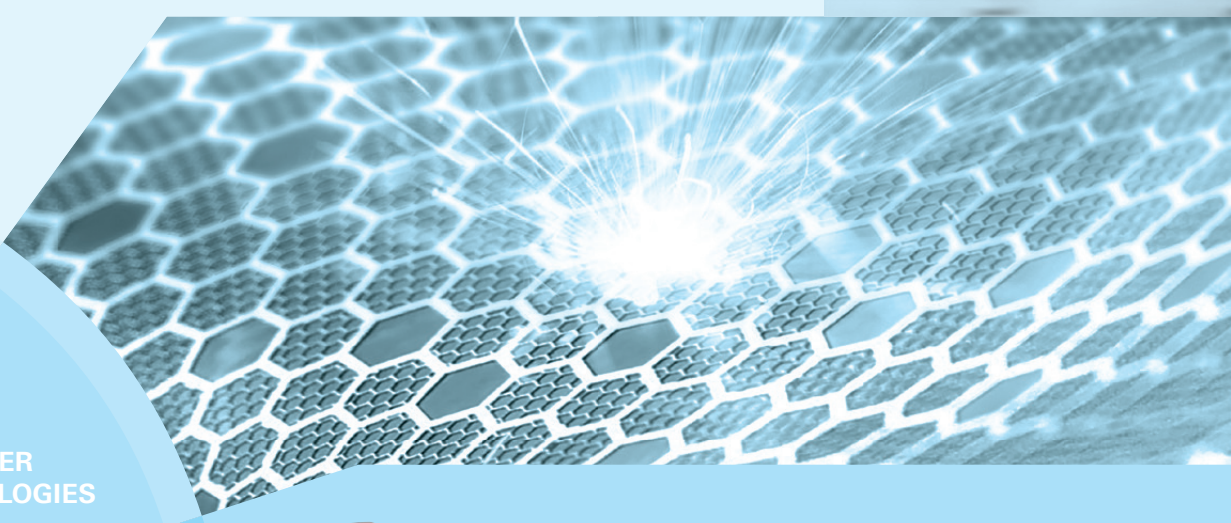
IRPD develops and sells additive machine tools for industrial 3D printing of metal parts, with a focus on performance, reliability, and high component quality.



AGIE CHARMILLES

Founded in 1954
Headquarters Losone, Switzerland

AGIE CHARMILLES, inventor of EDM, is known as a premium brand and innovation leader in Wire, Die-Sinking, and Hole-Drilling EDM. Their automation-ready solutions serve mold making and high-end part production—delivering Swiss precision, reliability, and performance.



EDM

LASER TECHNOLOGIES

MILLING

SPINDLE PRODUCTION

AUTO-MATION

MIKRON MILL

Founded in 1908
Headquarters Biel, Switzlerand

MIKRON MILL is a global expert in vertical milling and the inventor of high-speed milling. Renowned for dynamic precision and free-form accuracy, the automation-ready machines deliver top performance in complex applications. MIKRON MILL stands for innovation, agility, and lasting value.

STEP TEC

Founded in 1995
Headquarters Biel, Switzerland

STEP-TEC is one of the leading brands for high-precision and high-performance motor spindles, with a wide range of products and services to support the industry in milling, turning and grinding. Built with in-house expertise, Step-Tec spindles are known for their long life, precision, and reliability.

system 3R

Founded in 1967
Headquarters Stockholm, Sweden

Expert in zero reference tooling, automation, and software systems, SYSTEM 3R delivers comprehensive solutions to the entire manufacturing industry, streamlining manufacturing processes and boosting efficiency.

UNITED MACHINING

CHARMILLES

Founded in 2009
Headquarters Geneva, Switzerland

CHARMILLES – this new brand for laser technology – builds on 15+ years of expertise from GF Laser and Microlution. As one of the global leaders in surface texturing and micromachining, CHARMILLES delivers advanced nano- and femtosecond laser machine systems for demanding manufacturing needs.

LIECHTI

Founded in 1865
Headquarters Langnau in the Emmental, Switzerland

LIECHTI is one of the global leaders in 5-axis milling solutions for the aerospace and power generation industries. With a strong customer focus, LIECHTI delivers both standardized and customized solutions tailored to meet specific production needs.

TOOLS & TECHNOL

NEWS FROM UNITED MACHINING SOLUTIONS

From blank to tool in one clamping: The new VISION LASER from WALTER cuts even super-hard materials quickly and precisely

OGY

CONTENTS

20 **THE NEW S23**
The new universal genius from STUDER

21 **WIREDRESS®**
Revolutionary dressing system from STUDER now also for internal cylindrical grinding

22 **INNOVATIVE AXIS**
New axis system for the S33 and S31 from STUDER

23 **UPDATE OF THE FAVORITCNC**
Entry-level machine from STUDER gets new features

24 **360-DEGREE SPECIALIST**
The new BLOHM MC7

25 **VISION LASER**
The new laser cutting machine from WALTER

26 **NEXT LEVEL CUSTOMER PORTAL**
Numerous improvements for customers

27 **PRECISION AT THE MICRO LEVEL**
The new LASER X 500 U from CHARMILLES

28 **THE FUTURE OF WIRE-CUTTING ELECTRICAL DISCHARGE MACHINING**
The new CUT S series from AGIE CHARMILLES

30 **BEST SURFACES**
The new MIKRON MILL P 500 VHP

31 **COMPACT ALL-ROUNDER**
The T3-600 from SYSTEM 3R with three-axis SYSTEM

STUDER

KEY ADVANTAGES

THE NEW S23

- Compact design
- Distance between centers 650 mm/1000 mm and center height 175 mm
- Automatically swiveling wheelhead (B axis) for two external grinding wheels and one internal grinding wheel or production wheelhead
- Intuitive operation with C.O.R.E. and StuderWIN
- Standardized automation of production with STUDER *easyLoad* and *insertLoad*

CONTACT
Rolf.Grossenbacher@studer.com

COMPACT UNIVERSAL GENIUS

The new S23 universal cylindrical grinding machine offers a lot of flexibility and modern features in a compact size

With the new compact design S23, STUDER is expanding its range of universal cylindrical grinding machines. Despite its small size and weight, it's packed with cutting-edge, high-quality grinding technology. This includes state-of-the-art C.O.R.E. hardware and software architecture, an automatically operated B axis with 1° Hirth serration for up to three grinding tools (two external and one internal grinding wheel), frequency-controlled motor spindles or belt drives, as well as the machine base made of vibration-damping Granitan® with outstanding thermal properties.

"The new S23 complements the range between the entry-level and premium segments in our portfolio and is the optimal solution for a wide range of applications due to its economy, capabilities, and equipment," Rolf Grossenbacher, Overseas Sales Manager at STUDER, points out. The machine grinds small to medium-sized workpieces with great precision and reliability, even with complex geometries, both in single-part and series production. Ideal possible uses are found in mold making, toolmaking, the automotive sector, aerospace, and medical technology.

PRODUCTIVE OPERATION

Appropriate systems ensure contact detection, semi-automatic balancing of the external grinding wheel, and optional in-process measurement control. Customers also have configuration options to adapt the machine to their production needs. These include the optional swivel table or a C axis for thread and form grinding. Customer-specific adaptations are also possible.

Operation is simple and intuitive thanks to C.O.R.E., including a touch panel and the StuderWIN software. Setup and changeover times are minimal, and customers benefit from the convenient QuickSet function. Thanks to standardized loader interfaces for the *insertLoad* and *easyLoad* from STUDER, production can be easily automated. This makes the S23 the ideal compact universal cylindrical grinding machine with high-quality features at an excellent price-performance ratio.

DRESSING INTERNAL GRINDING TOOLS WITHOUT APPLYING FORCE

The unique WireDress® dressing system for electro-conductive bonded cubic boron nitride (CBN) and diamond grinding wheels now also enables a technological advantage in internal cylindrical grinding

It was a worldwide innovation when STUDER introduced its WireDress® non-contact dressing system for external cylindrical grinding. It is an Electrical Discharge Machining unit that is fully integrated into the cylindrical grinding machine. Diamond and CBN grinding wheels with electro-conductive bonds can thus be dressed without contact at full grinding speed. "After extensive further development, we can now use WireDress® for internal cylindrical grinding and also dress even smaller radii," says Michael Klotz, Head of Mechanical Development at STUDER. This means that customers also benefit from complex profiled grinding wheels and maximum cutting ability for internal applications of steel alloys or very hard materials such as ceramics or tungsten carbide.

"To be able to use WireDress® for deformation-free dressing of long internal grinding quills and easy-cutting internal grinding wheels, we had to bring the spark EDM (Electrical Discharge Machining) current into the grinding quill," explains Klotz. The solution: an internal grinding spindle that can transmit current of hundreds of amps at full grinding speed.

This means that short, long, and thin grinding quills with grinding wheels in the millimeter diameter range can also be freely profiled on the WireDress® dresser without applying mechanical force. As a result, internal applications that were previously impossible or very difficult to achieve can now be ground with process reliability.

KEY TECHNOLOGY FOR INCREASED EFFICIENCY AND MACHINING OPTIONS

There are also major advantages in terms of efficiency and profitability over mechanical dressing methods. There is no wear on the dressing tool. The grinding wheel has a high degree of grain separation for maximum cutting ability, which is an important advantage when the coolant supply is generally difficult during internal grinding. Another highlight: All external and internal grinding tools on the wheelhead can be dressed fully automatically on the same WireDress® dressing unit, in the same setup, and without re-dressing. A combination with mechanical dressing systems is also possible.

"With the expansion to internal cylindrical grinding, WireDress® continues to establish itself as a key technology for the most efficient grinding processes," Klotz sums up. Applications that will benefit from the new development are, for example, medical implants, aerospace components, roller bearing rings, control spools, or compressors for fuel cells used in the energy sector.

KEY ADVANTAGES

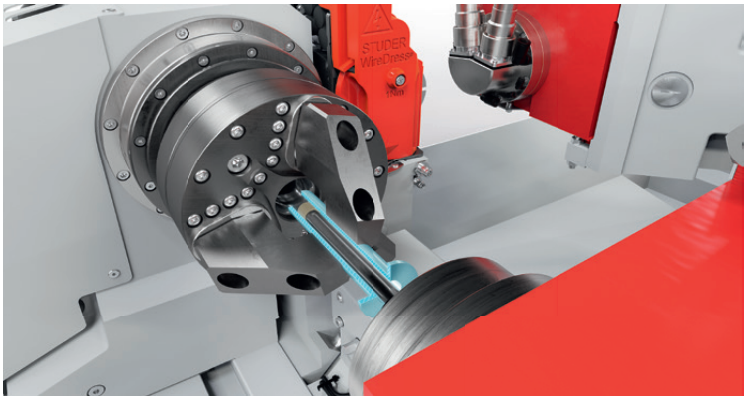
WIREDRESS® FOR INTERNAL GRINDING

- Dressing of long internal grinding quills without deflection at grinding speed for maximum precision
- A universal, wear-free dresser for internal and external cylindrical grinding for combined grinding processes in one clamping
- Grinding wheel inner radii ≥0.15 mm possible
- Fully integrated in StuderWIN machine and control system
- Available for S41 and S22

CONTACT
Riccardo.Delai@
studer.com

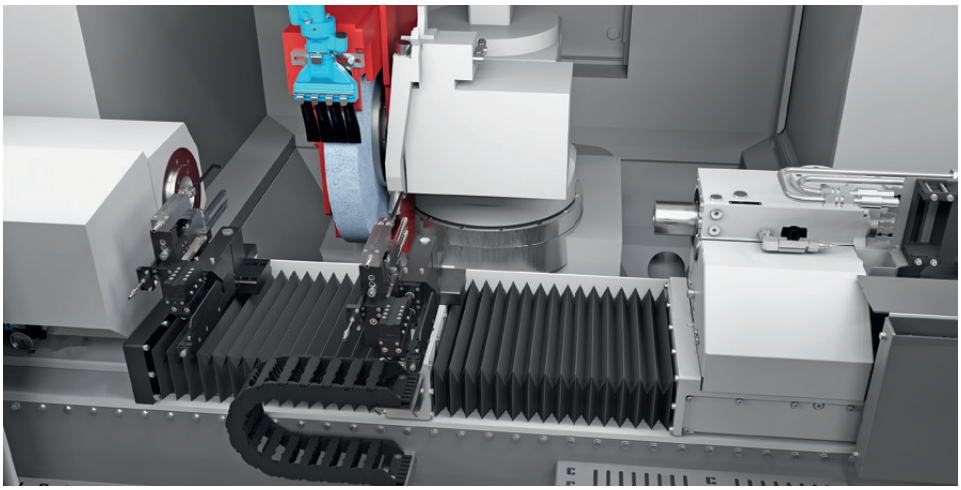
"WIREDRESS® OPENS UP NEW POSSIBILITIES FOR OUR CUSTOMERS WHEN IT COMES TO INTERNAL GRINDING."

Michael Klotz



Thanks to WireDress®, the grinding quill with metal-bonded diamond coating is particularly easy-cutting and precise. It can grind deep internal bores in this tungsten carbide compressor shaft over its entire length in one clamping.

STUDER



The new axis system for the S33 and S31 automatically adapts to different workpiece lengths

NEW AXES FOR AUTOMATIC LENGTH ADJUSTMENT

An innovative axis system for the S33 and S31 sets new standards for small to medium production volumes in automated precision cylindrical grinding

Different workpiece lengths in a part family often require compromises in the sequence of grinding operations, clamping devices, or positioning of in-process measuring devices in automated precision cylindrical grinding. Manual changeovers between production batches were often necessary, which resulted in production interruptions. With the axis system developed by STUDER, this has become a thing of the past. For the CNC universal cylindrical grinding machines S33 and S31, a long W axis is now available to customers as an option. This is integrated in the Z-slide of the machine and allows the tailstock position to be adjusted automatically to different workpiece lengths.

Possible W axis configurations include a barrel tailstock, a synchronous driven center (tailstock spindle), and other accompanying attachments. "The new universal W axis is a major step toward full automation of small to medium batch sizes," explains Michael Klotz, Head of Mechanical Development at STUDER. These include a large stroke – with a 1000 mm basic center distance, the tailstock can be moved by 720 mm – a high permissible load with a workpiece weight of up to 150 kg as well as an integrated, motorized cylindricity correction for position-dependent, programmable corrections.

DIRECT FORCE MEASUREMENT FOR FORCE-CONTROLLED CLAMPING PROCESS

Another new feature is the direct clamping force measurement integrated in the W axis configurations, both for the barrel tailstock and the driven center. Based on the measured data, the force-controlled clamping process allows reproducible clamping conditions for the best precision from delicate to very heavy workpieces. An additional option is the actively driven R axis. During grinding, it can scan several geometrical segments along the workpiece with an in-process measuring system. This increases flexibility in the grinding process design and reduces the quantity of measuring heads required. The R-slide can also automatically move the W-slide with barrel tailstock to a new position.

Production companies with a need for automated grinding processes with small and medium batch sizes will, in particular, benefit from the new axis system. The W axis is therefore perfectly suited for workpieces of different lengths, such as hydraulic components, tool holders, or gear components. The additional R axis is ideal for geometrically complex workpieces that need to be measured in multiple locations. Examples of this are gear shafts or control valve spools in the aerospace industry.

KEY ADVANTAGES

THE NEW W AXIS AND R AXIS FOR THE S33 AND S31

- The W axis automatically adjusts the tailstock position to the workpiece length
- Barrel tailstock or driven center with the tailstock spindle
- Programmable, force-controlled clamping process
- Motorized cylindricity correction for programmable corrections
- Active R axis for longitudinal traveling measuring systems

CONTACT
Pascal.Schaerer@studer.com

THE NEXT GENERATION OF THE FAVORITCNC

Technologically further developed and with new features, the favoritCNC combines proven grinding experience with the latest technology

The popular entry-level machine for precise external and internal cylindrical grinding, favoritCNC, is now available to customers in a new generation with numerous cutting-edge features. This includes an updated CNC control system (FANUC 0i-TFP) as well as smart automation options. For example, a new automatic operator door and the loader interface allow production to be automated. An integrated grinding wheel change aid and parking position for the tailstock inside the machine (optional) increase user-friendliness.

"There are further improvements in efficiency, ergonomics, and sustainability," says Kaspar Schaerer, Sales Manager for Northern and Eastern Europe at STUDER. For example, the new belt-driven spindle system requires fewer resources without compromising performance. And the new machine bed with larger X guideway spacing ensures even greater stability of the wheelhead for the best precision in machining. Another new feature is the digital display of the swivel angle on the manual B axis and the optional QuickSet function for a particularly fast changeover.

KEY ADVANTAGES

THE NEW GENERATION OF FAVORITCNC

- Improved efficiency, ergonomics, and sustainability
- High flexibility and precision for a wide range of grinding applications
- Short machining time thanks to complete machining
- Granitan® S103 mineral cast machine base
- Advanced software and automation options

CONTACT
Kaspar.Schaerer@studer.com

NEW CONVENTIONAL MODE

Flexibility is ensured by a fixed wheelhead for productive external grinding (adjustable to 0°/15°/30°) as well as a universal wheelhead for internal and external grinding (manual swivel 2.5° Hirth precision serration). Configuration options, such as a fixed or swiveling workpiece table, or options such as size control gauging, balancing system, contact detection, and longitudinal positioning, enable a wide variety of grinding tasks.

Operation of the new favoritCNC is via a 10.4-inch screen and an ergonomic manual control unit. The StuderPictogramming grinding software and the optional offline-based StuderGRIND make it possible to intuitively set up even complex processes, while StuderThread and StuderForm support the grinding of out-of-round forms and threads. "The new Conventional Mode also allows a manual grinding cycle, which makes switching from conventional to CNC controls particularly easy," explains Schaerer.

"THE NEW FAVORITCNC OFFERS CUTTING-EDGE FEATURES FOR HIGH-QUALITY GRINDING AT AN EXCELLENT PRICE-PERFORMANCE RATIO."

Kaspar Schaerer

The popular favoritCNC has the latest generation of state-of-the-art features

BLOHM

THE VERSATILE 360-DEGREE SPECIALIST

With an innovative concept, the new MC7 manufactures even complex workpieces with high productivity

The new MC7 five axis machine is a versatile CNC grinding center for production. It is based on an advantageous design where the coolant feed turns 360 degrees around the grinding wheel. "This Performance 360 concept allows more axis combinations for the workpiece fixture, and the grinding wheel can move around the workpiece," explains Ronny Müller, Head of Sales & Marketing at BLOHM JUNG. The nozzle system, with its positioning on the tool and process-optimized coolant supply, ensures effective operation and reduced cycle times.

In combination with various table variants, this technology creates new possibilities for efficiently machining complex geometries. This ensures a reduction in setup times, higher production efficiency and precision, and minimizes machining time by the combination of different grinding processes. Another outstanding capability of the MC7 is programming with CAD/CAM, an important prerequisite for targeted process development of demanding components. The machine can be loaded via multiple access interfaces, automatically by a robot or a loader, as well as manually.

AUTOMATIC TOOL CHANGER

Thanks to C.O.R.E. and cutting-edge software, the MC7 is easy to operate even without programming knowledge and offers a variety of digital features and automation options. The optional tool changer (up to 72 tools) is also easy to operate. In addition to grinding wheels, milling cutters, drills, and measuring tools are also possible. Its versatility, process stability, and precision make the machine ideal for use in the aerospace, automotive, or energy sectors, for example, for manufacturing turbine blades.

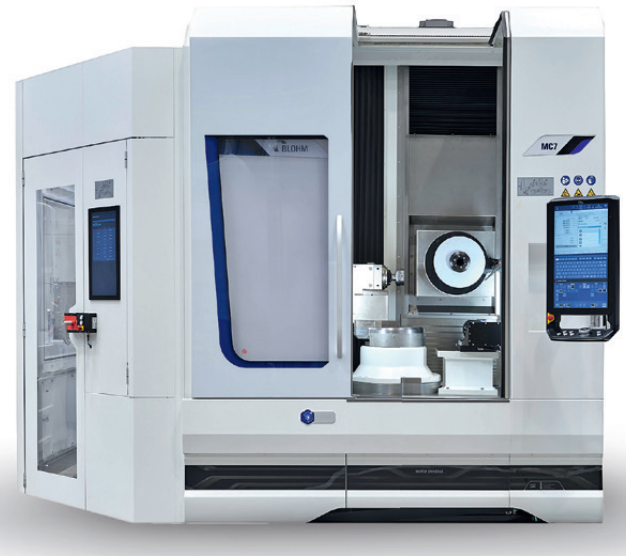
In addition to the high level of functionality, the development team placed great importance on a compact design. This means that the footprint remains virtually unchanged compared to previous generations, despite the increased functional capabilities. The MC7 benefits from its robust design with high stiffness and large guideway spacings for reliably reproducible precision. High axis speeds of up to 50 m/min on the X and Z axis reduce auxiliary times and further shorten the machining time.

KEY ADVANTAGES
THE NEW MC7

- Maximum machining flexibility with 360-degree technology, which enables the machining of complex workpiece geometries
- Platform concept for a wide range of applications
- Efficient process development with CAD/CAM
- CD dressing (continuous dressing) for high grinding quality, also for grinding wheels up to 500 mm diameter
- Optional automatic tool changer with 72 positions
- Easy operation and digital features thanks to C.O.R.E. and smart software

CONTACT
Ronny.Mueller@
blohmjung.com

360-degree coolant feed design allows the grinding wheel to move around the workpiece



"THE INNOVATIVE DESIGN OF THE MC7 OFFERS CUSTOMERS GREATER FLEXIBILITY AND EFFICIENCY FOR COMPLEX MACHINING."

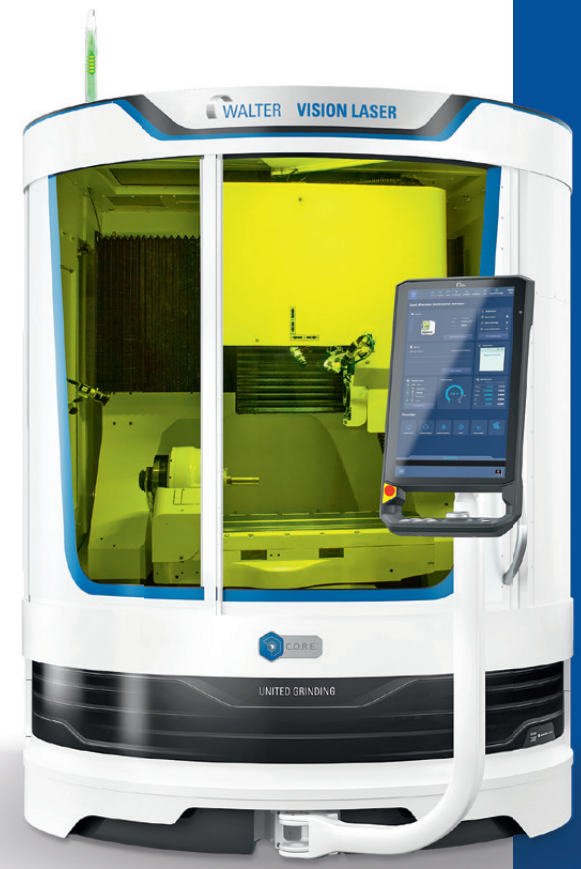
Ronny Mueller

LASER PROCESSING AT THE HIGHEST LEVEL

The new VISION LASER revolutionizes the machining of super-hard materials

"THE NEW VISION LASER OFFERS HIGHER CUTTING SPEEDS, MORE FLEXIBILITY, AND A BETTER SURFACE QUALITY."

Silas Junger



The VISION LASER machines the most complex tools in just one clamping

The trend towards greater efficiency in the mobility and energy sector also increases the demand for tools that meet the growing material requirements. Super-hard materials are perfectly suited for the demanding machining of modern composites, fiber-reinforced synthetic materials, plastics, and lightweight materials. WALTER is responding to this trend with the innovative VISION LASER laser processing machine. It can be used to produce precise and productive brazed tools made of diamond (PCD, CVD, MKD).

"In the production of brazed PCD tools, laser technology offers numerous advantages over previous manufacturing processes," says Silas Junger, Product Manager Ultrahard Materials at WALTER. For example, the hardness and electrical properties of the material do not play a role in laser processing, and the cutting speed is about twice as high. The VISION LASER delivers impressive cutting speeds of over 1.6 mm/min with a material thickness of 1.6 mm. Another advantage is the superior surface quality with the finest surface finishes. Laser processing also eliminates the need for consumables such as coolant or wire and requires less energy for operation.

KEY ADVANTAGES

TOOL PRODUCTION WITH THE VISION LASER

- High cutting speeds of over 1.6 mm/min
- Produces end mills, ball nose cutters, stepped tools, and other types of tools in one clamping
- Complex geometries with high surface quality
- Simple operation and smart features thanks to C.O.R.E. and GTR ProfDia Laser
- Automated production possible

CONTACT
Silas.Junger@
walter-machines.de

FROM BLANK TO TOOL IN ONE CLAMPING

The design of the machine is based on the proven HELITRONIC VISION from WALTER, and the laser system used ensures high industrial reliability and precision. At the same time, operation is simple and intuitive thanks to the smart digital features of the state-of-the-art C.O.R.E. operating system and the integrated GTR ProfDia Laser software. Automatic laser calibration, live process cameras, or real-time consumption data are just a few of the system's advantages.

In this way, the VISION LASER can produce the finished tool from a blank in one clamping operation. Be it end mills with inserts, ball nose cutters, stepped tools, or other types of tools. "And even with complex 3D geometries such as chip grooves and concave internal contours, that was not possible with previous manufacturing methods," says Junger. And customers who want to automate their production can find the optimal option for this with the comprehensive automation concept from WALTER.

UNITED GRINDING

NEXT-LEVEL CUSTOMER PORTAL

The new version of the UNITED GRINDING customer portal is the central hub for machine interaction with live data and optimized service

Live machine data, energy monitoring, or service requests around the clock: These are just some of the functions offered by the latest version of UNITED GRINDING's digital customer portal. "The combination of real-time data, location-independent availability, and seamless integration makes the customer portal the central hub for optimized service and machine interaction and creates significant value for the productivity of our customers in modern manufacturing," explains Jan Mennerich, the product manager responsible.

A key advantage is the use of the platform of the technology partner Transaction Network, which is manufacturer-independent and thus offers a uniform platform for a wide range of OEMs and suppliers. This creates a seamless, digital user experience for the customer, regardless of the machine manufacturer. Automation of services and processes makes information sharing and interaction faster, more transparent, and more efficient than ever before. This is apparent in the use of the web-based customer portal on desktops, tablets, and smartphones, or directly on the operating panel for machines with C.O.R.E. technology.

DIGITAL MANUFACTURING ECOSYSTEM

A particular development focus was on the integration of data as a value driver. Users will be able to keep an eye on the machine status at all times, thanks to the live dashboard, and make informed decisions, or create the foundation for energy savings and sustainability reporting with energy monitoring. "The interplay between the next-level customer portal, networked machines, and our customer care becomes manifest in an end-to-end digital manufacturing ecosystem that allows us as manufacturers to work even more easily and closely with our customers," says Mennerich.

Customers will benefit from digital service interactions, including direct ticket creation on the C.O.R.E. control panel of the machine, as well as the digital provision of all relevant documentation and manuals. Service requests will therefore be possible around the clock, and notifications will show the actual status. This will create more efficiency and transparency in the service process and help to minimize downtime.

"THANKS TO THE NEXT-LEVEL CUSTOMER PORTAL, WE AS A MANUFACTURER CAN WORK EVEN MORE EASILY AND CLOSELY WITH OUR CUSTOMERS."

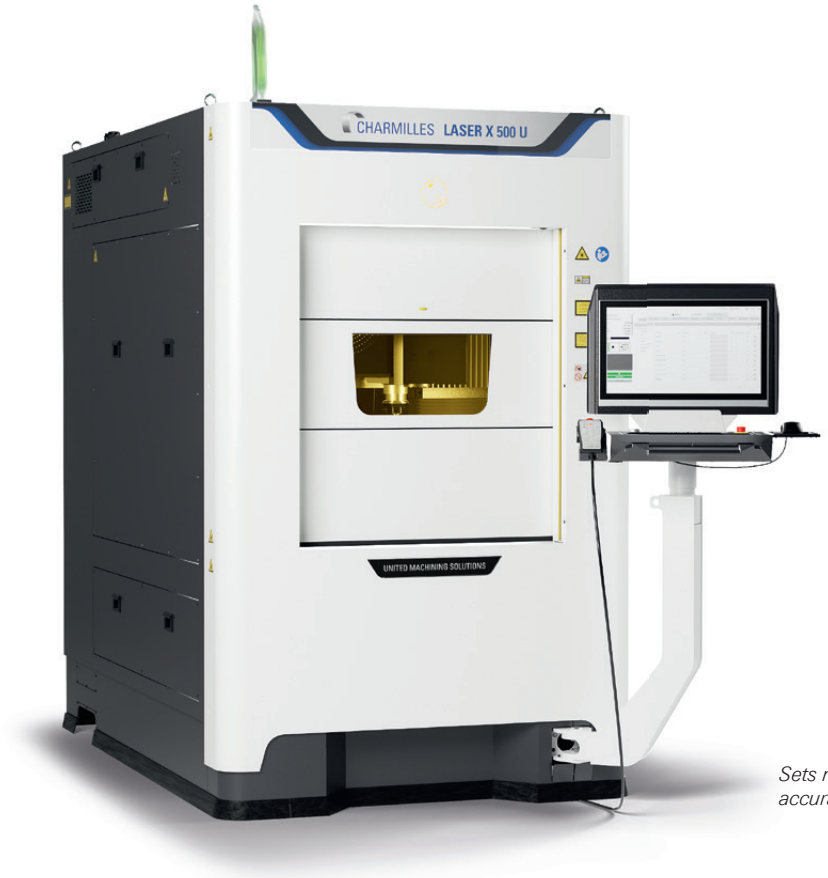
Jan Mennerich

CONTACT
Jan.Mennerich@grinding.ch

KEY ADVANTAGES

NEXT-LEVEL CUSTOMER PORTAL

- Manufacturer-neutral and independent portal for all machines
- Access to machine and service data at any time
- Digital machine file with all important information in one place
- Initiate service requests directly on the C.O.R.E. panel



Sets new standards in precision and accuracy: the LASER X 500 U

KEY ADVANTAGES

LASER X 500 U

- Ultra-high precision and process stability
- Clean and sharp machining thanks to the femtosecond laser technology
- Optimized with CAD/CAM software LaserSUITE360®
- Versatile applications for high-precision components in electronics, watchmaking, and micro-machining sectors

CONTACT
Adrien.Rodrigues@machining.com

REDEFINING PRECISION AT THE MICRO LEVEL

With the LASER X 500 U, CHARMILLES delivers innovative 5-axis laser manufacturing with uncompromising accuracy for the most demanding micro-cutting, micro-drilling and micro-machining parts.

Whether to craft intricate watch components or to shape tools for the electronic industry, the LASER X 500 U sets new standards in precision for micro-manufacturing. The innovative 5-axis laser system integrates an ultra-short femtosecond pulsed laser (1 femtosecond = 10^{-15} seconds) ensuring a clean material ablation, which eliminates the need for post-processing. In line with CHARMILLES's DNA the machine is fully thermo-stabilized and its unique kinematics are designed to ensure extreme accuracy. With a spot size of just a few microns, the laser tool allows machining details of the highest quality.

Ideal for high-precision components, the LASER X 500 U can process any metal – including silicon carbide, ceramics, sapphire, or glass, which are challenging to process with conventional machine tools. The dynamic optics, combined with high-speed linear motors, boosts productivity, and customers also benefit from easy, precise and consistent results.

"DESIGNED FOR EXCELLENCE IN MICRO PARTS MACHINING."

Adrien Rodrigues

Powered by the advanced CAD/CAM software LaserSUITE360, the system allows intuitive programming even for the most complex operations offering unparalleled simplicity in computing the tool path.

LASER TECHNOLOGY ENSURES HIGH QUALITY AND SUSTAINABILITY

Travel ranges of 550 x 400 x 500 mm, a B-axis swivel range of -110° to +110°, and C-axis rotation up to 720° provide high flexibility. "The LASER X 500 U's capabilities redefine excellence in electronics, medical applications, watchmaking, and micro tools machining,"says Adrien Rodrigues, Product Expert at CHARMILLES. Another key advantage is sustainability: without tool wear, electrodes, or cutting forces, the machine combines high manufacturing quality with economic and ecological benefits, thanks to low energy consumption and minimized operating costs.

AGIE CHARMILLES

THE FUTURE OF WIRE CUT MACHINING: THE CUT S SERIES

With the new CUT S Series, AGIE CHARMILLES sets new standards in precision manufacturing, featuring advanced wire EDM technology and high user-friendliness

Precision EDM manufacturing is undergoing a major evolution: The CUT S Series – comprising the CUT S 400, CUT S 600, and CUT S 800 models – introduces a new generation of high-precision wire cut machines. Thanks to their innovative technology and modern design, they offer new possibilities for a wide range of industries. At the heart of these machines is the revolutionary Intelligent Power Generator (IPG). Unlike conventional generators, the IPG operates with resonance circuit technology, ensuring maximum efficiency with minimal energy consumption. Its near-complete reduction of heat emission makes it a "cold generator." Thanks to its compact design, the generator can be placed close to the work area, significantly reducing noise caused by long cable routes. The result: clean, uniform, and fully repeatable pulses that guarantee a precisely controlled electrical discharge process.

Another key innovation of the CUT S Series is the new mechanical TETRAX™ design, which enables unprecedented flexibility and precision in taper machining. This advancement is complemented by a new patented collision protection system and the full range of Spark Track technologies, including ISPS and iWire. The symmetrical layout of the machines improves accessibility and optimizes conditions for flexible automation solutions, making them ideal for high-precision manufacturing with maximum productivity. Operation and maintenance have also been simplified, with easily accessible maintenance points and operator-friendly features that reduce operating costs and increase machine availability. The entire CUT S Series is controlled via the modern UNIQUA interface, designed for intuitive and user-friendly operation.

Finally, the CUT S series will be the first EDM machine able to produce parts free from any copper contamination, thanks to a new patented wire and a new optimized technology. This will allow manufacturers in the semiconductor processing industry to eliminate costly and delicate cleaning processes, thus simplifying the manufacturing process and reducing costs and lead-time. The dedicated technology will guarantee high process stability, high precision and automated threading.

MADE TO MEET CUSTOMER'S NEEDS: THE CUT S 400, S 600 AND S 800

"In developing these features, special emphasis was consistently placed on our customers' needs," says Giovanni Rimoldi, Head of EDM Sales Support and Product Management at UNITED MACHINING. And the same applies to the CUT S series' portfolio allocation.

The CUT S 400, the most compact machine in the series with dimensions of just 2.06 x 3.3 x 2.24 meters, offers an ideal balance of precision and flexibility, with generous strokes of X 405, Y 315, Z 256, U 500 and V 350 mm. It is ideal for the production of stamping tools, mold and die parts, medical devices and implants. With a wire diameter range of 0.05 to 0.3 mm and a series-wide excellent surface roughness of Ra 0.08 µm, it delivers outstanding results in a small footprint. Its

"OUR NEW SERIES OF HIGH-END WIRE EDM MACHINES IS DESIGNED WITH EXCEPTIONAL USER-FRIENDLINESS, REFLECTING OUR COMMITMENT TO LISTENING TO AND MEETING OUR CUSTOMERS' NEEDS."

Giovanni Rimoldi

high precision and suitability for process automation make it a versatile solution for a wide range of manufacturing tasks.

The CUT S 600 provides larger travel distances in all axes (X 605, Y 405, Z 356, U 700, V 450 mm) while maintaining almost the same compact footprint as the CUT S 400. It is ideal for customers who need more capacity without having to upgrade to the largest machine. This makes it the perfect solution for users processing larger workpieces while maintaining high quality and efficient space utilization.

The CUT S 800, the flagship model, is designed for large-scale, ultra-precise stamping tools, molds, aerospace components, and part production. Featuring the largest travel distances in the series (X 800, Y 600, Z 510, U 800, V 600 mm), it offers unmatched flexibility for large-format applications. With a wire diameter range of 0.15mm to 0.3 mm, it delivers exceptional precision and reliability, even for larger travel distances. It is particularly suited for applications in the automotive industry, for example stamping tools for electric vehicles, as well as aerospace, precision engineering or mold and die makers.

With the launch of the CUT S Series, AGIE CHARMILLES sets a new benchmark in wire EDM technology. The combination of the revolutionary IPG generator, the innovative TETRAX™ design, outstanding surface quality and expanded strokes across all axes delivers unprecedented precision and flexibility. The CUT S Series perfectly blends high technology with user-friendliness, meeting the growing demands of modern manufacturing – whether for small precision parts or large-scale components.

CONTACT
Giovanni.Rimoldi@
machining.com

The new CUT S Series is an evolution for high quality EDM manufacturing

KEY ADVANTAGES

THE NEW CUT S SERIES	CUT S 400	CUT S 600	CUT S 800
Ultra-high precision and reliability with the Intelligent Power Generator (IPG)	Most compact footprint and ideal for small and medium-sized high-precision components	Can handle larger high-precision components while maintaining a small footprint	Flagship model for large-scale high-precision components
Excellent surface quality of Ra 0.08µm	Dimensions: 2060 x 3300 x 2240 mm	Dimensions: 2060 x 3500 x 2240 mm	Dimensions: 2640 x 2870 x 2650 mm
User-friendly operation and compact modern design	Axis stroke: X 405, Y 315, Z 256 U 500, V 350 mm	Axis stroke: X 605, Y 405, Z 356 U 700, V 450 mm	Axis stroke: X 800, Y 600, Z 510 U 800, V 600 mm

MIKRON MILL

PRECISION MILLING FOR EXTREME ACCURACY

The new MIKRON MILL P 500 VHP delivers exceptional surface quality and accuracy reliably, even over extended machining cycles

KEY ADVANTAGES

THE NEW MIKRON MILL P 500 VHP

- High surface precision through linear drives without backlash
- Long-term process stability via polymer concrete and intelligent thermal control
- Maximum productivity with 42,000 rpm spindles and smart automation options

CONTACT
Juan.Martin@machining.com

The 3-axis high-precision milling machine MIKRON MILL P 500 VHP is specifically designed for demanding tool and mold manufacturing. Thanks to its special linear drive design, it achieves accuracies critical for producing high-precision microcomponents in the information and communications technology sector (ICT). Competing machines often use ball screws, which can negatively impact surface quality due to backlash. The VHP's polymer concrete machine bed, with its excellent damping properties, also reduces vibrations and contributes to its high precision.

Optimal force distribution and long-term thermal stability is ensured by the symmetric portal design. This is complemented by innovative technologies such as Intelligent Thermal Control (ITC), the Operator Support System (OSS), and Step-Tec Opticool/CoolCore spindles operating at up to 42,000 rpm. Together, these features guarantee a high process reliability essential for prolonged machining cycles and make the machine robust against environmental influences.

IDEAL FOR ICT AND PRODUCTIVE PRECISION APPLICATIONS

The P 500 VHP particularly benefits ICT customers producing high-quality mold inserts for lenses or connectors. However, its applications extend to other industries: from reflector molds for automotive or household appliances to fuel cell tools and medical device molds—anywhere extreme accuracy and superior surface finishes are required.

"The intelligent automation concept with rear-loading enables significant productivity gains, and its compact footprint allows space-efficient integration into diverse environments," says Juan Martin, Head of Customer Development at UNITED MACHINING. The MIKRON MILL P 500 VHP thus offers exactly what modern manufacturers need to remain competitive in an increasingly demanding market: reliable precision combined with high productivity.

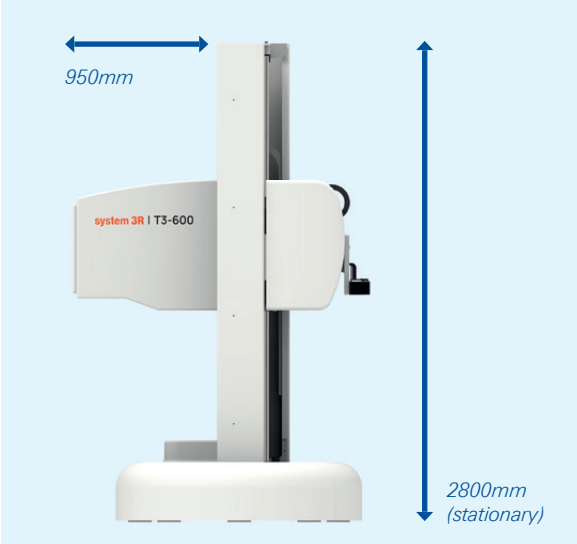
High accuracy with supreme surface quality: the new MIKRON MILL P 500 VHP

"MIKRON MILL DNA AT A GLANCE, ACCURACY OVER LONG CYCLE TIMES, DYNAMIC AND READY FOR AUTOMATION."

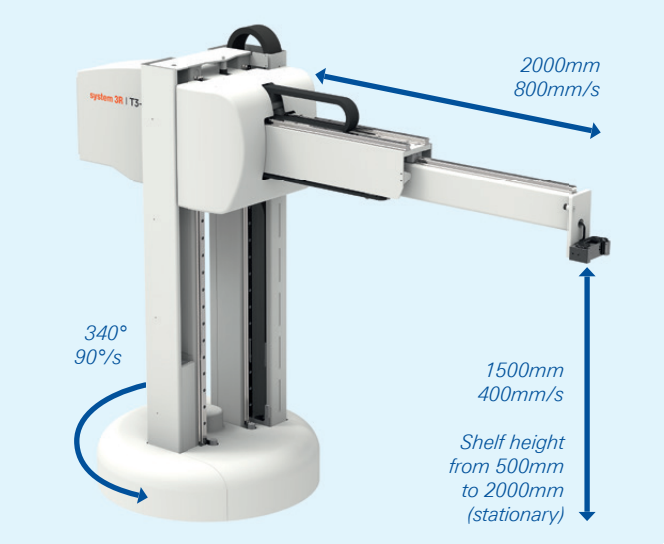
Juan Martin

THE NEW THREE-AXIS ALL-ROUNDER

The three-axis manipulator T3-600 from SYSTEM 3R combines high flexibility with space-saving design and efficiency



The T3-600 offers a very compact design and can handle high payloads up to 600 kg



The extended X-axis and its slim telescopic arm allows easy access even to large machine tables

The new TRANSFORMER 3-axis 600 (T3-600) is an innovative and flexible automation solution for a wide range of machine tools and applications. It features a particularly compact yet robust three-axis design, handling transfer weights up to 600 kg. "The extended X-axis of 2000 mm allows easy access to large machine tables, while the slim telescopic arm fits into tight workspaces and facilitates entry through narrow machine doors," explains Francesco Viganò, Automation Product Manager at SYSTEM 3R.

Comparable industrial robots on the market often handle lower payloads and use six axes – increasing space, installation, and maintenance demands as well as susceptibility to errors. By enabling stationary or rail-mounted installation, the T3-600 scales effortlessly: from operating individual machines to linking over 20 machines in a cell. It handles SYSTEM 3R tooling systems, ranging from the small Macro 54 x 54 mm to Delphin 800x800 mm pallets for big workpieces, and is compatible with various machine tools for milling, grinding, EDM, laser and measuring.

Specific pneumatic grippers enable transport of lightweight components like EDM electrodes or milling tools between magazines and machines, enhancing machine autonomy and overall cell efficiency. Workflows are orchestrated via the WorkShopManager software, which coordinates even complex processes in automated cells. The solution also supports industry-standard communication protocols, offering a unique blend of power, flexibility, and user-friendliness.

As a pallet-based automation solution, the T3-600 suits all manufacturing sectors requiring pallet transport to and from machines. Its high payload capacity and compact design make it ideal for mold- and toolmaking and industries like automotive, aerospace, energy and medicine.

KEY ADVANTAGES

THE NEW T3-600

Flexible automation for diverse workpieces, tools, and processes

High payload capacity of 600 kg (including workpiece, pallet and gripper)

Efficient three-axis design reduces installation and maintenance costs as well as error risks

X-axis: 2000 mm (800 mm/s) /
Z-axis: 1500 mm (400 mm/s) /
C-axis: 340° (90°/s)

CONTACT
Anders.Hagstrom@
machining.com

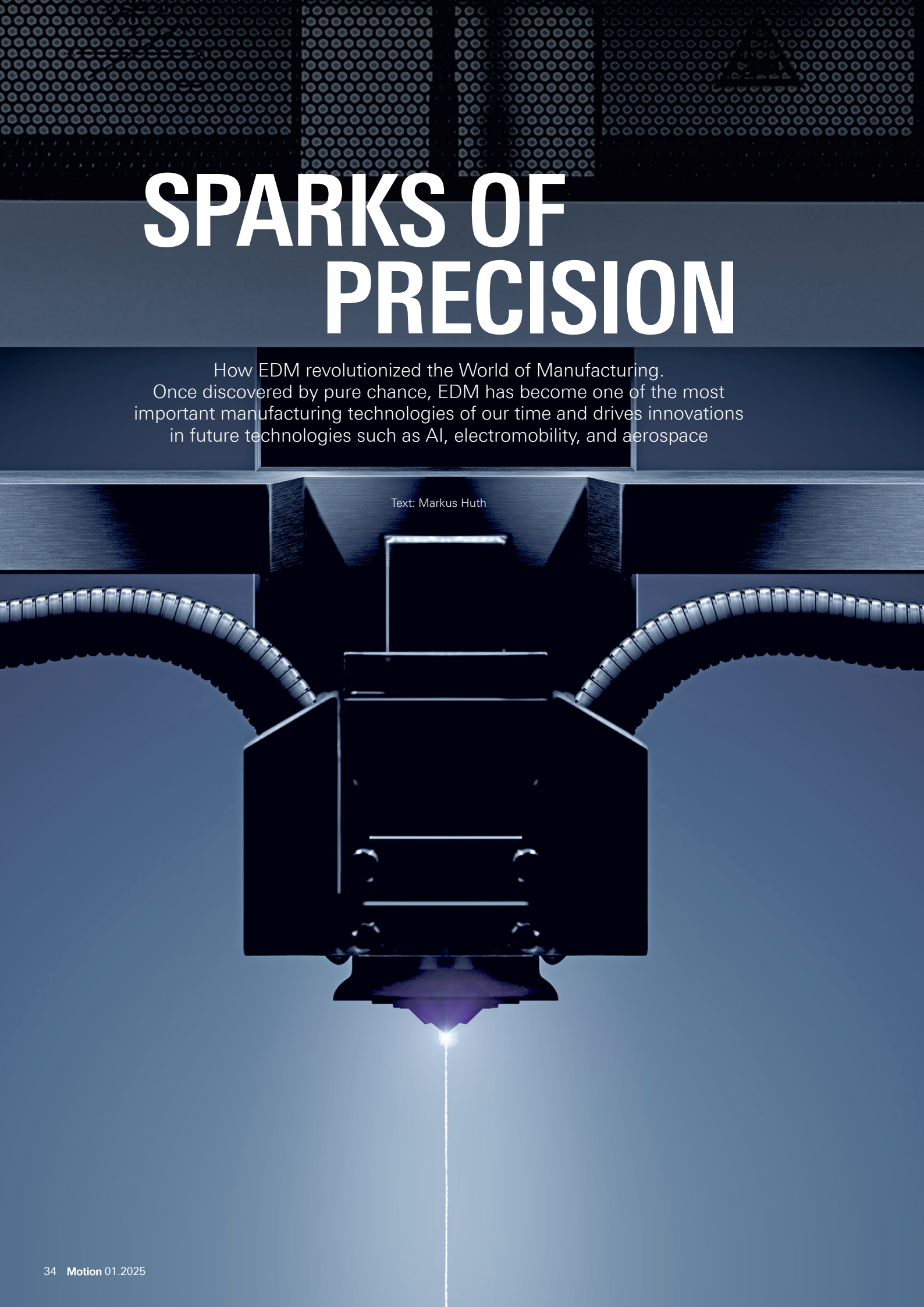
WHEN LASERS DRAW

Laser machining is ideal for a variety of operations, from texturing product molds and parts production to micromachining applications such as micro-drilling, micro-cutting, micro-engraving or micro-shaping. The CHARMILLES laser machines, supported by the integration of ultrashort pulsed lasers, can ablate the hardest materials like ceramics and achieve the tiniest tolerances within the micron range. From a user perspective, the entire CHARMILLES laser method offers numerous advantages. The process is fully digital thanks to the CAD/CAM LaserSUITE360, enabling simpler and consistent machining jobs. Environmental friendliness is also one of its major advantages, as no chemicals or consumables are used. Nowadays, laser machining technology offers a credible complementary or substitute process to traditional machining methods by being even more precise and cost-effective, as there is no tool wear.

SPARKS OF PRECISION

How EDM revolutionized the World of Manufacturing.
Once discovered by pure chance, EDM has become one of the most important manufacturing technologies of our time and drives innovations in future technologies such as AI, electromobility, and aerospace

Text: Markus Huth



The Swiss companies AGIE and CHARMILLES have been shaping the EDM technology since the 1950s and are today part of UNITED MACHINING

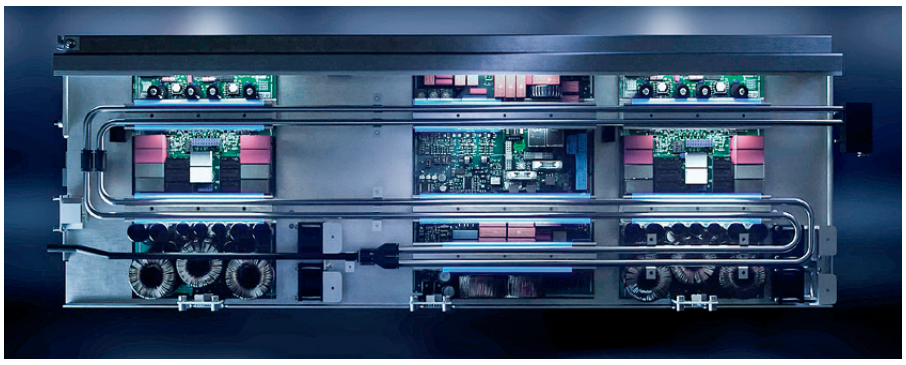
FASCINATED, Russian scientists Boris and Natalya Lazarenko observe in their laboratory in Moscow in 1943 how spark discharges precisely remove metal. Actually, their experiment had aimed for the opposite, namely to reduce the damage to electrical contacts caused by spark formation. But shortly thereafter, they deliberately used the accidentally discovered effect for the first time to process materials – the birth of the modern manufacturing technology EDM (Electrical Discharge Machining). It works by igniting short, controlled sparks between an electrode and a conductive workpiece – embedded in a dielectric medium such as oil or deionized water. Each spark vaporizes microscopically small particles, while the fluid washes away deposits.

"You could compare it to a lightning strike that precisely carves away material, but this happens over a million times per second," explains Umang Maradia, Head of TU EDM at UNITED MACHINING. This makes it possible to cut or shape even the hardest metals such as titanium alloys or tungsten carbide with micrometer precision. Unlike mechanical manufacturing technologies such as milling or grinding, this happens without contact. Especially for very fine and complex geometries in the micrometer range and hard materials, EDM is often the only efficient possibility for production. Another advantage is the excellent surface quality. Today, even molds for polished surfaces like plastic toy bricks or extreme precision molds for camera lenses can be produced via EDM. Additionally, it can excellently complement other processes such as milling, grinding, or lasers.

AGIE CHARMILLES SHAPES THE EDM INDUSTRY TO THIS DAY

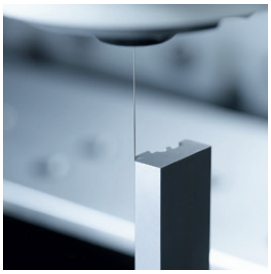
Shortly after the discovery in Russia, the development of EDM into an industry-viable manufacturing technology gained momentum in another country: In Switzerland, two companies – CHARMILLES and AGIE (A.G. for industrial electronics) – developed the first production-ready EDM machines and presented them to the world public at the machine tool exhibition in Milan in 1954. In the following decades, they also contributed numerous innovations to help realize the full potential of EDM. Today, both companies are part of UNITED MACHINING as AGIE CHARMILLES. "With over 1000 patents, we have shaped important standards in the industry and continue to do so," says Maradia. Precisely controllable generators, automatic wire changers, coated wires, independent axis pairs, or AI-supported CNC control: the list of innovations is too long to enumerate them all here.

Today, EDM machines like the modern CUT- (for wire EDM), FORM- (for die-sinking EDM), and DRILL- (for hole-drilling EDM) series by AGIE CHARMILLES are high-tech devices. At their heart is the innovative Intelligent Power Generator (IPG), which allows



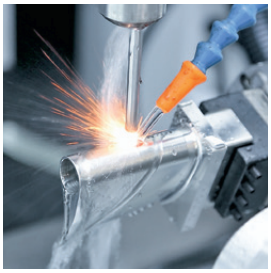
The innovative Intelligent Power Generator (IPG) from AGIE CHARMILLES, part of UNITED MACHINING enables digital and precise control of every spark and is extremely energy-efficient

EDM TECHNOLOGIES



Wire EDM cuts precise contours in conductive materials using a thin, continuously moving metal wire as an electrode through electrical discharges. Among other things, it is ideal for manufacturing precise punching tools or for producing complex shapes for turbine disks.

Die-sinking EDM uses a pre-formed electrode that transfers its negative form to the workpiece through electrical discharges, creating complex cavities. A typical application is the production of high-precision injection molds for plastic components.



Hole-drilling EDM uses a rotating tubular electrode to make precise holes in even the hardest materials through electrical discharges. For example, exact microchannels can be drilled into medical implants.

fast, reliable, and digital control of each spark and drastically reduces energy consumption. The machines also support their users with smart features such as temperature control, automatic wire threading, sensor-supported real-time data acquisition, monitoring of spark concentration (Spark Track), intuitive operation (UNIQUA), and automation options. This means that they can meet the highest industry standards and produce numerous products for our modern world.

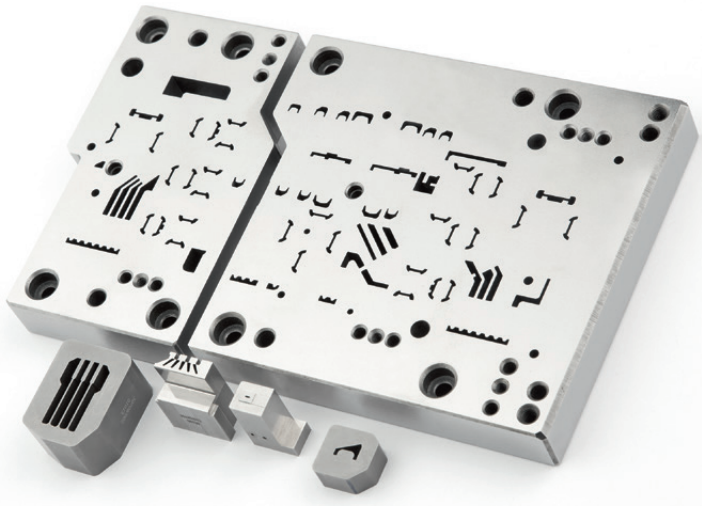
EDM IS A KEY TECHNOLOGY FOR THE FUTURE

For example, EDM machines are used to produce the tools that manufacture the filigree data and energy connectors in electronics, whether for smartphones or data centers. The fine lamellae in electric motors or the complex geometries of fir tree slots in aircraft turbines are also manufactured with them. Another application area is injection molds for numerous plastic products of our daily lives, such as toothbrushes. "Whenever I open a yogurt, I have to think about EDM," laughs Maradia. This is because the airtight sealing foils of the cups are punched with ultra-hard tungsten carbide tools. A CUT machine produces the razor-thin cutting edge with a precision of only a few micrometers, many times thinner than a human hair.

Experts expect that EDM as a manufacturing technology will become even more important in the future. This is because it enables the processing of highly complex geometries even in new high-tech materials, for example, in aerospace or automotive engineering, that would not be feasible with mechanical manufacturing methods. In addition, the trend toward miniaturization in electronics, medical technology, and energy systems continues and increases the demand for precision machining. "Thanks to digitalization and AI assistance, EDM machines will be even easier to automate in the future and will also be able to manufacture faster and with even more precision," explains Maradia, adding: "EDM remains a backbone of our modern world."

"EDM IS INDISPENSABLE FOR THE PRODUCTION OF SO MANY PRODUCTS IN OUR MODERN WORLD."

Umang Maradia,
Head of Technical Unit EDM at UNITED MACHINING



Wire EDM machines by AGIE CHARMILLES enable the production of ultra-precise stamping tools made of carbide for high-volume connectors manufacturing. They consistently deliver ultra-high machining accuracy of less than two microns

INNOVATIVE BY TRADITION

At the foot of Monte Rosa: A mountain hut stood here since the 19th century. In 2010, it was replaced by a crystalline building. Designed by ETH Zurich, it is packed with innovative high-tech and is 90 percent self-sufficient.

Photo: Sektion Monte Rosa

While the power of innovation is waning in many countries, Switzerland is forging ahead at full speed and was recently voted the most innovative country in the world for the 14th time in a row. What is the recipe for success?

Text: Matthias Kriegel

THE SUCCESS STORY CONTINUES: In 2024, Switzerland landed first place in the Global Innovation Index of the World published by the Intellectual Property Organization – and not for the 1st time, but for the 14th time in a row. Furthermore, no country scored higher on the European Commission's 2024 European Innovation Scoreboard: The Confederation outperformed all 27 EU Member States with an innovation index of 152.2 points – 138.4% of the EU average. Of course, none of this happened by chance. Instead, it is the result of decades of development. Swiss success is based on the combination of tradition, innovation and stability.

INVESTMENTS ARE CRUCIAL

One cornerstone is Swiss industry, which invests massively in the future and its own future viability. The private sector alone spends CHF 18 billion annually on research and development. Since 2021, companies have increased their spending in this area by 3.5 percent per year – and they do this out of conviction. Nine out of ten Swiss companies – large companies and SMEs alike – consider innovation to be crucial for making them stand out from the competition. This is the result of a survey of 2500 decision-makers conducted by the major bank UBS in collaboration with the market research institute Intervista. Fifty percent of respondents see the greatest potential for innovation in products and services. For companies in the industrial sector, 25 percent consider innovations in production processes to be relevant, while service providers are also interested in innovations in the areas of IT and digital processes (20 percent). And almost two thirds see the greatest potential for innovation among their employees. "No progress can be made without the initiative and creativity of employees at all levels," says Christoph Plüss, CTO of UNITED MACHINING SOLUTIONS. "That's why we invest a great deal in training and development."

CONTINUITY AND TRADITION

Another reason for the success of the Swiss industry is that the portfolio is broadly diversified. It ranges from the pharmaceutical, chemical and food industries to financial services and the tech industry. "For example, let's think of watches with complex mechanisms that are extremely difficult to manufacture, or textile or machine tools," adds Ivan Filisetti, member of the management board of UNITED MACHINING SOLUTIONS. "Swiss companies have historically been at the forefront of innovation in many industries. There is a centuries-old culture here that has always distinguished Switzerland."

Here, Ivan Filisetti addresses another success factor of the Swiss economy: Continuity and tradition. It is embodied by countless companies that have been trading successfully for more than 100 years. STUDER, one of the world's leading manufacturers of precision cylindrical grinding machines from Thun, was founded in 1912. LIECHTI, one of the global leaders in 5-axis milling solutions, was established as early as 1865. The fact that these and many other Swiss companies are still successful so long after their beginnings is also due to their innovative spirit. "Darwinian law also applies to long-established companies," says Filisetti. "If they lose the ability to reinvent themselves and evolve, they are fated to disappear. We know this very well and have proven it time and again in our history by focusing on true innovation. For me, that means creating a product or process that didn't exist before."

"COOPERATION BETWEEN UNIVERSITIES AND COMPANIES IS ESSENTIAL TO SWITZERLAND'S INNOVATIVE POWER."

Prof. Dr Rudolf Minsch

Equally important to Swiss success is the educational system that creates the minds behind made-in-Switzerland innovations. "Cooperation between universities and companies is essential to Switzerland's innovative power," explains Prof. Dr. Rudolf Minsch, Deputy Chairman of the management board of economiesuisse, the largest umbrella organization of the Swiss economy. "The Swiss Federal Institutes of Technology are the linchpin. It is no surprise that many large foreign companies also want to conduct their research in Switzerland: they want to be close to the institutes." ETH Zurich and EPFL Lausanne are among the world's leading technical universities. For instance, in 2024, ETH Zurich launched a remarkable 37 new spin-offs, continuing its long-term upward trend in establishing new companies based on its research. The increasing amounts invested in ETH spin-offs prove their future viability and worth. Almost CHF 425 million was invested in 2024 – an increase of 25 percent compared to the previous year. In the last ten years, the total value has increased by a factor of ten.

The Switzerland Innovation Foundation's 16 nationwide innovation parks bring universities and business together. Since it was founded about eight years ago, it has led to the establishment of more than 300 companies. They focus on health and life sciences, mobility and transportation, energy, environment and natural resources, manufacture and production, and computer and data sciences. This strategic alignment with promising industries makes a significant contribution to Switzerland's long-term competitiveness. "We also maintain very close relationships with university research institutions and universities of applied sciences and carry out suitable research projects," says Christoph Plüss. "These are important sources of specialist staff and new employees."

FUTURE CHALLENGES

However, pivotal contributions to innovative success are also made beyond the university campus. Research institutions such as the CSEM (Center Suisse d'Electronique et de Microtechnique), a non-profit Swiss technology innovation center with more than 600 employees, develop technologies in the areas of precision manufacturing, digitalization, optical elements, artificial intelligence and sustainable energy. And the Federal Government fosters science-based innovations with Innosuisse, the Swiss Agency for Innovation Promotion. In this way, they want to ensure that innovation topics of major and cross-sectoral import are addressed.

Despite all this success, Switzerland also faces challenges. Although research and development expenditure is high, the share of gross domestic product has been stagnating for years. Three-quarters of the companies surveyed by UBS cited the shortage of skilled workers as a particularly worrying issue. Almost 40 per cent of small and medium-sized companies and 53 per cent of large companies fear that the situation will escalate. For Ivan Filisetti, it is clear: "The solution to this problem must be found

Innovators of tomorrow: A look at the premises of ETH Zurich. In 2024, it was ranked 11th by trade magazine Times Higher Education – making it the best university in continental Europe

Photo: ETH Zürich/Meinrad Schade

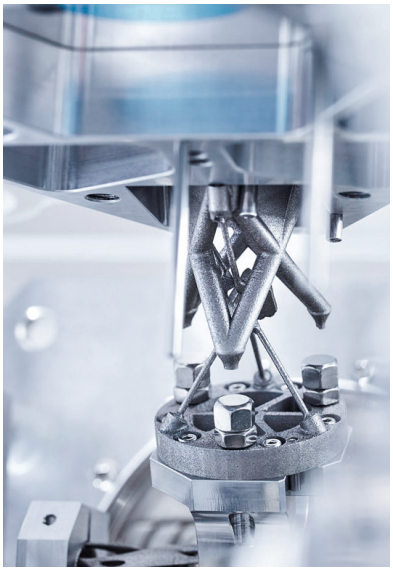
Shaping the future: The Zurich Innovation Park on the airport site in Dübendorf offers a platform for research, development and innovation

within the company itself. Training future specialists internally has a huge impact and is also an excellent motor for internal innovation. We also need a culture of continuous innovation and transformation to motivate our employees."

"THOSE WHO REFUSE TO EMBRACE DATA SCIENCE AND AI WILL NOT REMAIN COMPETITIVE."

Christoph Plüss

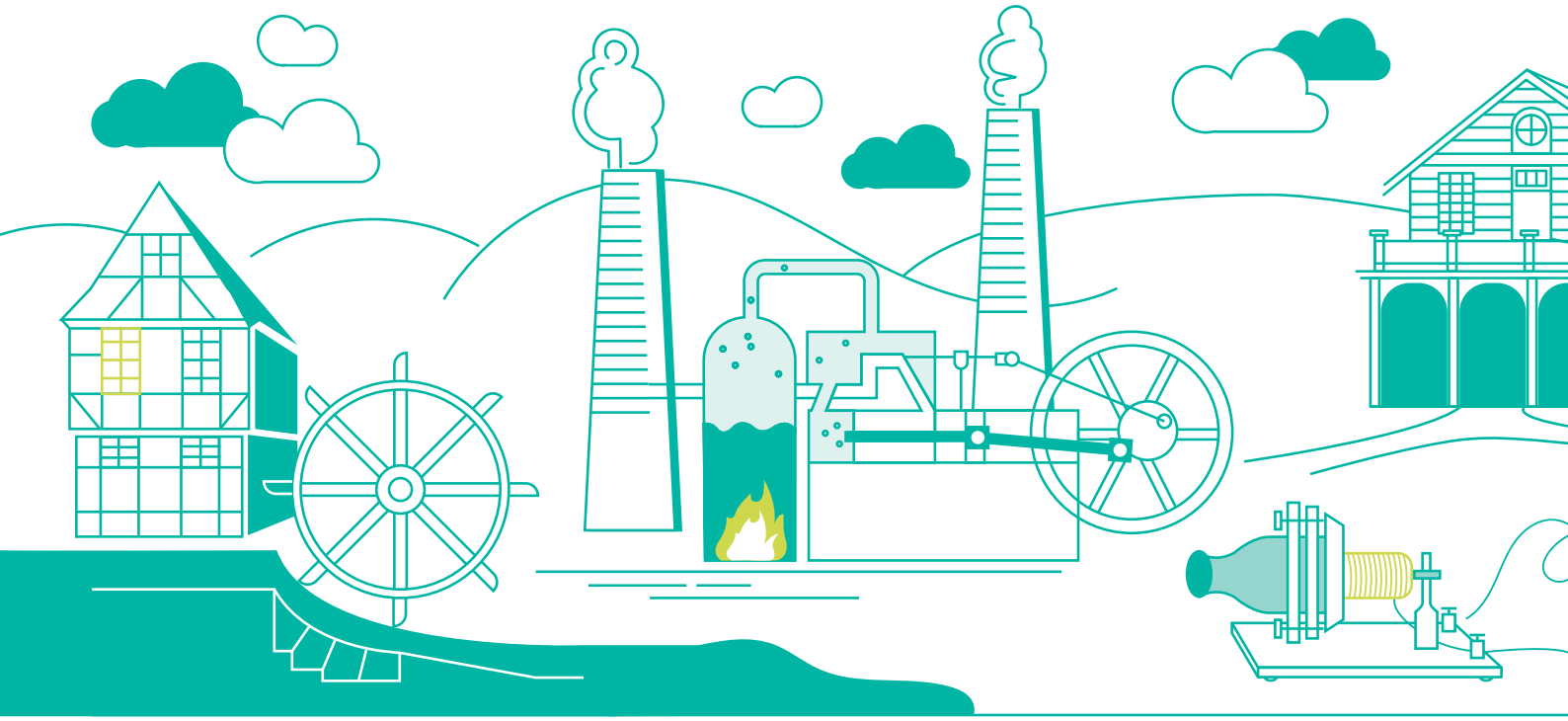
Another challenge is the ongoing digital transformation, particularly due to the growing use of cloud computing, big data, and artificial intelligence. Large companies implement these technologies much more frequently than smaller companies. This is widening the gap between businesses, warned the economic research agency of ETH Zurich at the beginning of January. On this subject, Christoph Plüss proudly refers to 2015: "We decided to tackle digitalization early on. As a result, we now have a unified digital basis and architecture that allows us to make purposeful use of the new potential of data science and AI. One thing is for sure: Those who refuse to embrace these developments will not remain competitive."



Although Switzerland has succeeded in developing a unique innovation ecosystem based on the interplay of tradition and innovation, global corporations, specialized small and medium-sized enterprises, cutting-edge research and practical training, innovation remains a dynamic construct; success is no reason to rest. "If we want to maintain our prosperity, we have to keep moving forward," explains Prof. Dr. Rudolf Minsch and draws attention to a point that is particularly important to him. "We must not isolate ourselves, but remain open. Around 50 percent of Swiss start-ups are founded by foreigners. Without them, international cutting-edge research and innovation are impossible." If we continue on this course, the future will see ever more innovations made in Switzerland – and Switzerland will retain its first place in the Global Innovation Index for the 15th time.

The CSEM is also involved in designing a NASA space telescope. Bottom: a reflecting telescope made up of six elements. Top: a 3D-printed structure that aligns the mirror with high precision

Photos: Switzerland Innovation Park CSEM (2)



THE INVENTION OF THE MODERN ERA

When are inventions considered to be true innovations? And how will they come into being in a world that is increasingly shaped by artificial intelligence?

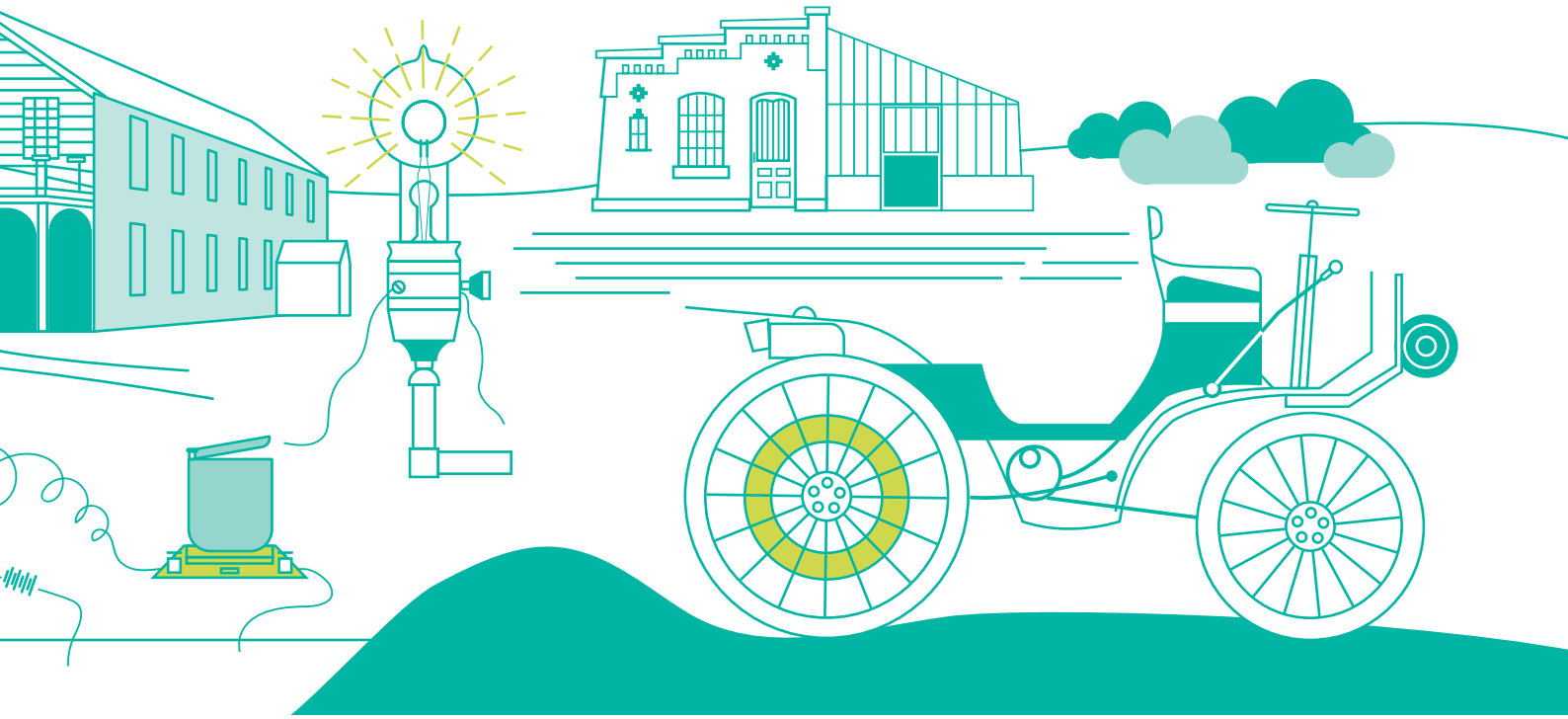
Text: Michael Hopp – Illustration: Alexandra Barlow

WHAT IS AN INNOVATION? In today's world, where fascinating reports about groundbreaking developments appear to circulate daily, you might think that the term innovation is used in an almost inflated way. An explanation is obsolete in any case, because it's obvious: Innovation is something new, unprecedented. However, it's not that easy. If you look at the term innovation in its original meaning, it may seem clear: It's derived from the Latin word innovare—renewal. But is innovation simply about renewing things, or rather about helping completely new processes, products, and production methods get off the ground? Like the steam engine that James Watt used to revolutionize industry in the 19th century. Thomas Edison's light bulb, introduced in 1879, that brought electric light into households. Alexander Graham Bell's phone, three years earlier, that raised global communication to a new level. The automobile, also invented in the late 19th century, that launched individual mobility. These are just a few examples, but they all have something in common: Their creators didn't just invent their innovations out of nothing; there is always a "before", an innovation cycle that had led to a certain technical state of production, and that made the next step possible. That required a transfer achievement by people who later became pioneers.

Today, there are so many definitions of innovation that you can almost choose the one that currently seems appropriate. Joseph A. Schumpeter, today known as the founder of the innovation economy, wrote in the "Theory of Economic Development" (1911) that innovation is the implementation of a technical or organizational innovation in the production process. So not the invention itself, but establishing the invention. For Jürgen Hauschildt, also a pioneer in the field of innovation research, innovation is fundamentally something novel. This shows that there is a small common denominator, namely something that is "new", "novel", "unprecedented". But the path from invention to implementation can be long. And at what point is something designated as an innovation, does not seem to be ultimately clarified.

WHERE DOES INNOVATION START?

One striking example is the field of artificial intelligence. Ubiquitous today, AI is generally considered an innovation. But if you take a look at the history, questions arise. Is the chatbot I'm talking to really still an innova-



tion today? Or is it a further development? The history of AI is, very briefly, as follows: In 1936, Alan Turing developed the "Turing machine" that proved that a calculator can solve any problem if it can be represented by an algorithm and broken down into individual steps. Today, it is considered the cornerstone of AI development. In 1956, researchers at the Dartmouth Conference at the college of the same name in the U.S. state of New Hampshire defined the term "artificial intelligence". In 1966, IT specialist Joseph Weizenbaum developed the first chatbot: "ELIZA". The "NETalk" program, created by Terrence J. Sejnowski and Charles Rosenberg, was the first to use artificial neural networks in 1986. It learned the correct pronunciation of terms through example sentences and could transfer it to unfamiliar terms. Ten years later, in 1996, IBM's "Deep Blue" was the first computer to win a game of chess against the incumbent world champion Garri Kasparow, and a year later, even an entire tournament. And in the boom year of 2023, the technology became available for mass use, with numerous applications entering the market. But that raises the question: At what point was artificial intelligence an innovation?

According to Schumpeter, that would probably be starting in 2023, from the time of implementation in the mass market. What about Hauschildt? The first idea in 1936? The first application using the chatbot Eliza? Maybe it's pointless to want to define the exact date. However, this small, exemplary outline of an innovation process leads to the next, perhaps much more crucial question in innovation research today: Perhaps today it's no longer a question of what innovation is? But rather: How do we define innovation in a future where the creative power no longer comes exclusively from the human mind, and a classic innovation cycle is difficult to identify?

FROM INNOVATION TO INNOVATION CYCLE

The applications of artificial and generative intelligence in society and industry are growing at a pace that makes even the global implementation of smartphones seem tame. While it took mobile phones twenty years to reach two-thirds of humanity, AI applications are moving about twice as fast.

Its market is expected to grow to USD 233.46 billion in 2025 and USD 1,771.62 billion by 2032, with an annual growth of 29.2 percent, and to have left the market for smartphones far behind if things can be predicted so far in advance. Nobody knows how smartphones will develop, whether they will perhaps disappear in the user's glasses frames or a smart wristband, or whether subsequent innovations will soon make the smartphone obsolete. However, it seems to be established that artificial intelligence will have a major impact on innovations and innovation cycles, in terms of their speed, but also in the way that they originate.

Because the rapid pace of AI implementation makes it tempting to say that innovation cycles have been shortened by five to ten years. The benchmarks here are the classical theories such as the long waves of the Kondratieff cycle, Schumpeter's "creative destruction," and Moore's law, according to which the computing power of chips doubles every two years. In the previous theories, the first wave of innovation with hydropower, textiles, and iron lasted 60 years, starting in 1785, until electricity, chemicals, and mobility followed, while the fifth wave with IT and digitalization, which started in 1990, only lasted half as long. And the current sixth wave, with AI, robotics, and clean technology, is likely to continue for just 25 years. But does this view still apply?

WHICH CYCLE WILL DEFINE THE FUTURE?

It seems that AI has the potential to initiate a long-term economic wave and become the steam engine of the 21st century. We would then be at the beginning of a long-lasting period defined by artificial intelligence. It's predicted that the AI landslide could become a self-reinforcing cyclone, according to the logic: The more powerful artificial brains

become, the faster further innovations can be developed, tested, and rolled out. Unlike previous technological developments, AI is transforming the economy and our lives across sectors. And not just in individual areas, which makes it appear as its own long-term innovation cycle.

As such, the innovation cycles will be longer, not shorter. If, in addition, one is inclined to see AI merely as a follow-up innovation to IT and digitalization, which have already constituted an all-encompassing technological basis for the last 50 years, and then adds together the two periods that have operated separately, the picture of a 100-year megacycle of digitalization arises, a megacycle for which there is no end in sight. No end? If you remain in the definition of innovation cycles, which in history have always ended with something completely different and unprecedented, something non-digital would have to follow, perhaps in the middle of the century. We currently lack the imagination for this. At a time when the present and the future are difficult to distinguish, we may have relatively little idea of what the actual future will bring.

But the pace of AI and the development of real innovation are two very different things: Contrary to what the AI hype suggests, data has been pointing to a slowing rate of innovation for some time. Although the number of patents worldwide has increased in recent years, it has only increased by just over 4.2 percent per year, unlike the double-digit growth rates in previous years. Many studies show that innovation and digitalization are interdependent. If there is not sufficient investment in digitalization, innovation and growth will decline. The unstable global economy, shortages of skilled workers, and bureaucracy in individual European countries are further weakening innovation.

And here we've come full circle: After all, we have to wonder whether the innovation cycle is merely about the idea, the invention, or its implementation. Is AI a follow-up innovation to IT and digitalization and part of the same cycle, or is AI establishing a completely new era? And on what will the next big cycle have an impact? What is needed in society?

Some analyses relate the next major innovation cycle to the topic of psychosocial health, less technological and more social and human. AI would then play a supporting role. Other innovation researchers are of the opinion that innovation will increasingly come from the users themselves in the future, while companies will only provide teams and technology.

Inventiveness, pioneering spirit, joy of discovery: We will still need people who create innovations, and those who implement them on the market. Since AI came into the world, innovation hasn't increased significantly — it's only being talked about more often. At the University of Oxford, the argument has been advanced that AI is not able to dream and develop visions, which has always been at the beginning of big cycles, because in the end, AI only looks at the past, namely, data. AI could make insights from collected data more accessible but not develop anything new. A popular example: If people had been asked by Henry Ford what they would like, most would have answered 'a faster horse', a solution based on past experiences. Developing a car with a combustion engine was an innovation that was certainly based on earlier inventions, but it did not logically arise out of the past, especially if the decision had been based on objective data. It was a visionary, pioneering achievement. And it was a real innovation for both Schumpeter and Hauschildt. The invention - and its implementation. Therefore, the question "What is innovation?" is actually becoming a pointless issue. For the further development of our society, for the next innovation cycle, what seems much more intriguing is: How do innovations arise in a world that can hardly save itself from (apparent) innovations? In a world that will be heavily influenced by AI? Furthermore, is AI even capable of innovation, of reinvention, of something unprecedented, whatever the definition? The answer is still pending.

Trade show photo: Association of German Machine Tool Manufacturers (VDW)

THE FUTURE OF GRINDING TECHNOLOGY

In May 2026, **GrindingHub**, one of the world's leading trade shows for grinding and surface technologies, will take place **in Stuttgart** for the third time. The trade show will be organized by the VDW (Association of German Machine Tool Manufacturers) in cooperation with the Messe Stuttgart, the grinding conference, and Swissmem, the Swiss association for the tech industry.
Since its first edition, GrindingHub has become the hotspot of the industry. It offers trade visitors from all over the world the opportunity to find out about the latest developments. In addition to innovative machines, GrindingHub 2026 will also present numerous software solutions, automation technologies, and quality management tools that will continue to drive efficiency and precision in the grinding industry. Highly anticipated will be the advancing integration of Intelligent Manufacturing and Industry 4.0, with solutions that can be seamlessly integrated into the digital transformation of manufacturing. UNITED MACHINING SOLUTIONS will present its latest innovations and technological breakthroughs at the trade show. "GrindingHub offers us an ideal platform," says Michèle Fahrni, Head of Marketing & Communications. "Technologically cutting-edge, internationally aligned, and tailored to the products and offerings of the UNITED GRINDING division. We look forward to a lively exchange with our customers."

SAVE THE DATE

SEPTEMBER 2025

MACH-TECH & INNOTECH EXPO

9/30 - 10/3/2025
MACH-TECH SOFIA
Sofia, Bulgaria

MAY 2026

GRINDING HUB

5/5 - 8/2026
GRINDINGHUB
Stuttgart, Germany
www.grindinghub.de

APRIL 2026

SIMTOS 2026

4/13 - 17/2026
SIMTOS
Goyang, South Korea

CCMT

4/21 - 25/2026
CCMT
Shanghai, China

OCTOBER 2025

METALEX

10/1 - 3/2025
METALEX VIETNAM
Ho Chi Minh City, Vietnam

MSV 2025

10/7 - 10/2025
MSV
Brno, Czech Republic

MECT 2025 メカトロテック ジャパン 2025 MECHATRONICS TECHNOLOGY JAPAN

10/22 - 25/2025
MECT
Nagoya, Japan

NOVEMBER 2025

METALEX

11/19 - 22/2025
METALEX THAILAND
Bangkok, Thailand

MARCH 2026

TMTS

3/25 - 28/2026
TMTS
Taichung, Taiwan

GLOBAL INDUSTRIE

3/30 - 4/2/2026
GLOBAL INDUSTRIE PARIS
Paris, France

YOU CAN FIND THE LATEST TRADE SHOW DATES ON OUR WEBSITE.

UNITED
MACHINING SOLUTIONS

United Machining Solutions Management AG
Wankdorfallee 5
3014 Bern, Switzerland
T +41 31 356 01 11
www.ums.swiss

UNITED
GRINDING

MÄGERLE
BLOHM
JUNG
STUDER
SCHAUDT
MIKROSA
WALTER
EWAG
IRPD

grinding.ch

UNITED
MACHINING

AGIE CHARMILLES
CHARMILLES
MICRON MILL
LIECHTI
STEP TEC
SYSTEM 3R

machining.com