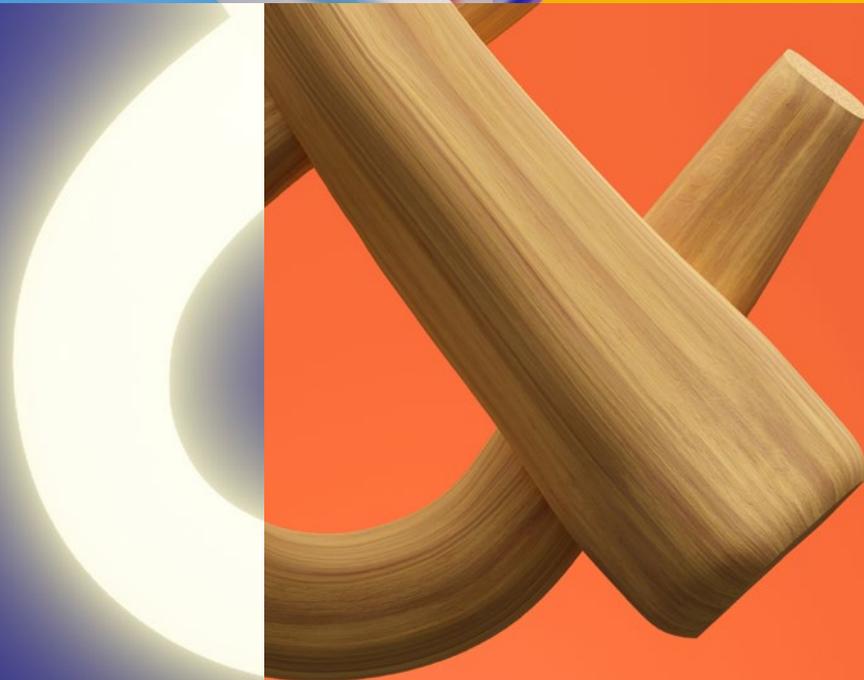


ECO

THE DÜRR GROUP MAGAZINE 2024



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BETTER TOGETHER

The only constant in life is change. This statement by the philosopher Heraclitus from ancient Greece is more relevant than ever. Our fast-moving world requires constantly evolving methods to keep pace with change. A corporation must be able to respond appropriately to changing situations. This is achieved when skills are combined, knowledge is pooled, and strong teams are formed. Boundaries blur across locations and generations when it comes to our shared goal: Thinking creatively about solutions for our customers and implementing them with focused expertise. We know that we're better together!

Values built to last

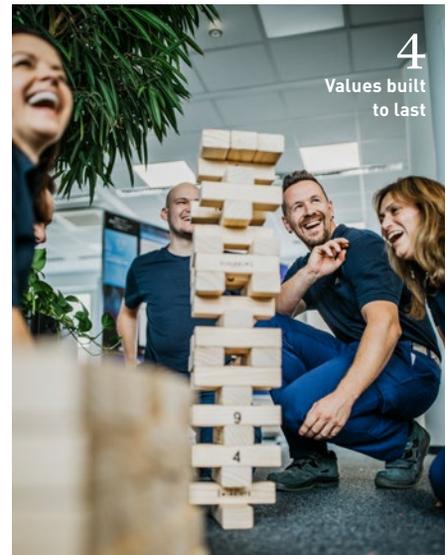
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Putting together what belongs together:

A toothbrush without toothpaste? A hammer without a nail? Many things only make sense together. In this magazine, you will get to know the Dürr Group from different perspectives and learn how we ensure that what belongs together comes together.



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Tomorrow starts today



ECO MAGAZINE DIGITAL

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www.durr-group.com/en/duerrmore

On the road with Dr. Jochen Weyrauch

Values built to last

Building blocks, quiz cards and bamboo canes — all Dürr Group employees complete a two-and-a-half-hour workshop to explore their company's sense of identity. CEO Dr. Jochen Weyrauch joined a team from the production department at their workshop.

TEXT: HEIMO FISCHER — PHOTOS: SASCHA FEUSTER

WE SHOW COURAGE
In the tower game, each player takes turns pulling out one block after the other until the increasingly wobbly structure collapses.



ON COURSE

A new corporate statement guides the Dürr Group in navigating the challenges of the future.

The Group spent more than a year developing a corporate statement at various levels. Around 80 employees with different roles, backgrounds, and lengths of service took part. The results were consolidated and summarized. The definitions for the company's purpose, vision, and mission were then finalized.

The **company's purpose** combines responsibility for future generations with environmental sustainability and economic efficiency for industry and trade. Cutting-edge technologies facilitate customers' safe and resource-efficient production of goods for billions of people.

The Group's **vision** is to achieve excellence in resource efficiency in mechanical and plant engineering through sustainable solutions. This is to benefit customers, society, and the environment.

The **mission** states that the **people** in the company take center stage. The Dürr Group offers attractive jobs and helps staff in their further development and in taking on responsibility. **Innovations** ensure that the Group is the technology leader in its markets.

Six values form the basis of the corporate statement: curiosity, courage, trust, cooperation, respect, and responsibility. During a workshop, employees find out which skills are necessary to embody these values.

The tower, which initially consisted of 60 building blocks, now looks like a skeleton with only half of the blocks remaining. Who wants to pull out the next block? The Group's CEO bends down and moves a piece of wood. Tension rises, the tower starts to wobble. Seconds later, the blocks are on the ground. The group cheers. Jochen Weyrauch smiles: "I specialize in making unstable things collapse."

The atmosphere is relaxed at the values-competencies workshop in Bietigheim-Bissingen. Over the past few months, hundreds of teams worldwide have completed these workshops. Many others are set to follow over the coming months. The goal of the exercise is to engage with the Group's corporate statement.

Starting on this day is a team that normally manufactures painting robots. The three women and seven men carry out different tasks. Some manufacture the components, some assemble them, and others program the software or check the quality of the end product. What one person does has an effect on the others. This requires trust, responsibility, respect, curiosity, cooperation, and courage. These values of the corporate statement are explored in depth during the workshop.

CEO Jochen Weyrauch accompanies the team at the workshop. He wants to observe what the staff associates with the values. Over the last two years, he has personally driven the development of the corporate statement.

Shared vision provides direction

Why is a corporate statement so important? "The world is undergoing profound changes. This constantly gives rise to new challenges to which we must respond quickly," says Weyrauch. He believes that conventional decision-making processes are too long for this. "Going forward, employees must be even more capable of thinking and acting proactively." To do this, they need a compass to point them in the right direction. This is provided by the corporate statement.

The exercise with the tower is all about courage. The winning team is the one that pulls out the most blocks without causing the tower to fall. But who wants to be the person responsible for the inevitable collapse? Courage is important to take on this responsibility.



WE WORK TOGETHER AS A TEAM

Easier said than done: Working together to place the bamboo cane on the ground with outstretched index fingers. In the "magic bamboo" group exercise, the cane will often inexplicably move up first.

Do such scenarios also exist in day-to-day work situations? This is what moderator Katja Stiber wants to find out from the participants afterward. "When we admit our mistakes," suggests one employee. Others think that "disagreeing with superiors" or "pushing through changes in the production process" also requires courage. In the second step, participants are asked to come up with recent situations where the team has lacked courage and why.

Gentle exercise with a hard cane

In the second exercise, the team focuses on "cooperation". To warm up, the participants are instructed to place one long bamboo cane on the tips of their index fingers and slowly lower it to the ground. The cane must not tilt or fall down. This means everyone must bend their knees at the same time, which requires sensitivity and cooperation.

After this exercise, a new round of questions begins: Where has the team worked together well, or not so well, recently? What were the reasons for this? Soon the conversations turn to



important everyday matters such as short communication channels, shared experiences, and product testing. Above all, trust, expertise, and respect for other opinions have enabled good cooperation in the past.

Card quiz with Group products

The final exercise is about “curiosity”. Here, the participants must guess Dürr Group products depicted on quiz cards.

During the subsequent discussion, the conversation turns to major projects that the Dürr Group implements for automakers. Several team members express that they would like to be informed more quickly about how satisfied customers are with the result. Weyrauch nods. “An important tip that I’ll take on board.”

Going forward, the group aims to continue thinking outside the box to maintain their good cooperation. One participant adds that, depending on the situation, you also need courage to let go of responsibility and relinquish control.

STAYING CURIOUS
Curiosity is an important value at the Dürr Group. It helps employees and the company to develop further.



Always on an equal footing

THE GROUP'S CEO DR. JOCHEN WEYRAUCH TALKS ABOUT KEY VALUES AND TRUE MOMENTS OF HAPPINESS.

You joined a robot production team at the values-competencies workshop. What did you learn?

WEYRAUCH I was impressed by how open the discussions were and how strong the awareness is of working together in a global group and sharing the same values.

Do you believe that values are becoming more important in the corporate world?

W Absolutely. Aside from healthy financial figures, companies need an identity that everyone shares. If you don't know who you are as a company, it is hard to achieve a common goal.

At the workshop, you were on an equal footing with the participants. Is this an everyday occurrence or an exception for a CEO?

W I always try to engage with other people on an equal footing. I listen to arguments and we make joint decisions whenever possible. But it goes without saying that I must personally stand behind a decision, as I am ultimately responsible.

Which value is most important to you in life?

W I wouldn't narrow it down to a single value, especially since values overlap. Successful cooperation is only possible with mutual respect. Courage and responsibility also go hand in hand. I try to align my actions with a framework of values.

Does a CEO need to have courage?

W Courage is an important trait for fulfilling this role. We make decisions based on known facts. However, the broader parameters can change. That's why I sometimes feel unsure when making important decisions. You do need courage in situations like that.

You once said that you wanted to open a motorcycle store in Paris after leaving school. Would you still have the confidence to do that today?

W Why not? I now understand much more about running a business — admittedly, a somewhat larger one! But I probably wouldn't get a start-up loan from the bank anymore due to my advanced age...

At what point in your career did curiosity play an important role?

W Curiosity is always important. Without curiosity, you stop evolving. My curiosity has been particularly sparked whenever I have taken on a new responsibility and have thus been able to learn a lot of new things in a short space of time. But it is very important to maintain curiosity in everyday life as well.

Who do you have great respect for?

W For people who take a clear stance, even if their point of view leads to controversy. Of course, I know from my own experience that it is often necessary to find the right balance between consensus and controversy.

For example?

W To promote sustainability and climate protection, we must take bold steps while simultaneously strengthening the industrial core of our country. This requires entrepreneurial spirit and innovation, but also a consensus in society in order to drive sustainable change.

Are you planning to go into politics?

W (Laughs) No. I am very happy with my current position.

Are there people you trust blindly?

W Of course, I would trust my wife, my mother, or my children blindly. But I assume the question is aimed at my role in the company. There, I put a great deal of trust in everyone at the outset. However, anyone who leads a company must never blindly rely on others, otherwise they would not be fulfilling their responsibilities.

What does happiness mean to you?

W Happiness means being at peace with myself. This includes health and living in a good environment. For me, happiness often lies in the little things.

What are they?

W Honest and open encounters with people, just like today at the workshop. Talking and listening to employees. Moments of exchange where you also have fun together. Those are moments of happiness for me.

Dr. Jochen Weyrauch on values: "If you don't know who you are as a company, it is hard to achieve a common goal."



BETTER TOGETHER



A POLISHED PERFORMANCE

Dental hygiene is unthinkable without toothpaste and a brush. Electric toothbrushes are assembled in huge quantities using the Dürr Group's systems. With its subsidiaries Teamtechnik, Hekuma, BBS Automation, and Kahle Automation, the company forms a true competence center for automation. The Dürr Group has now become a world leader in this area, too, and helps its customers to achieve efficient and sustainable automated production.

A U T O

FAST, PRECISE, AND FULLY AUTOMATED

M A T I O N

Automation is a megatrend in the industry.
With the acquisition of the specialist
BBS Automation, the Dürr Group has joined
the global leaders in the sector.



TEXT: HEIMO FISCHER
PHOTOS: TEAMTECHNIK, BBS AUTOMATION, HEKUMA



“The acquisition expands our expertise in production automation.”

FALK BÄURLE,
CFO OF THE PRODUCTION AUTOMATION
SYSTEMS BUSINESS UNIT

In the production of electric vehicle drive motors, hairpin technology plays a central role. Curved copper profiles that resemble a hairpin are crucial components of the motor. They generate the magnetic field of the electric drive. Their entire production process is automated. As part of this process, the copper profiles are cut to length and prepared for further processing. In the subsequent shaping stage, they take on their characteristic appearance. Finally, the hairpins are inserted into the stator and electrically connected using laser welding. The result is a high-performance motor that is characterized by maximum energy density and minimal vibrations.

The production of these motors must also keep pace with the increasing demand for electric vehicles. As an automation expert, BBS Automation offers customized systems for this purpose. These enable the efficient production of electric motors in large quantities in order to meet the increasing demands of the market.

Machines for building drives for electric vehicles are just one example of the product range offered by the Munich-based company, which employs 1,600 people at 16 locations worldwide. Suppliers from many other industries are equipped with automated production technology by BBS Automation — they manufacture medical products, electronics, or systems for power generation and storage, among other things.

In September 2023, BBS Automation and its company Kahle Automation, which specializes in production technology for medical devices, became part of the Dürr Group. “The acquisition has expanded our expertise in production automation,” says Falk Bäurle, CFO of the newly formed business unit for automation technology. In addition to BBS Automation and Kahle, this also includes Teamtechnik and Hekuma, two specialists that have been part of the Dürr Group for three years.

Excellent earnings prospects

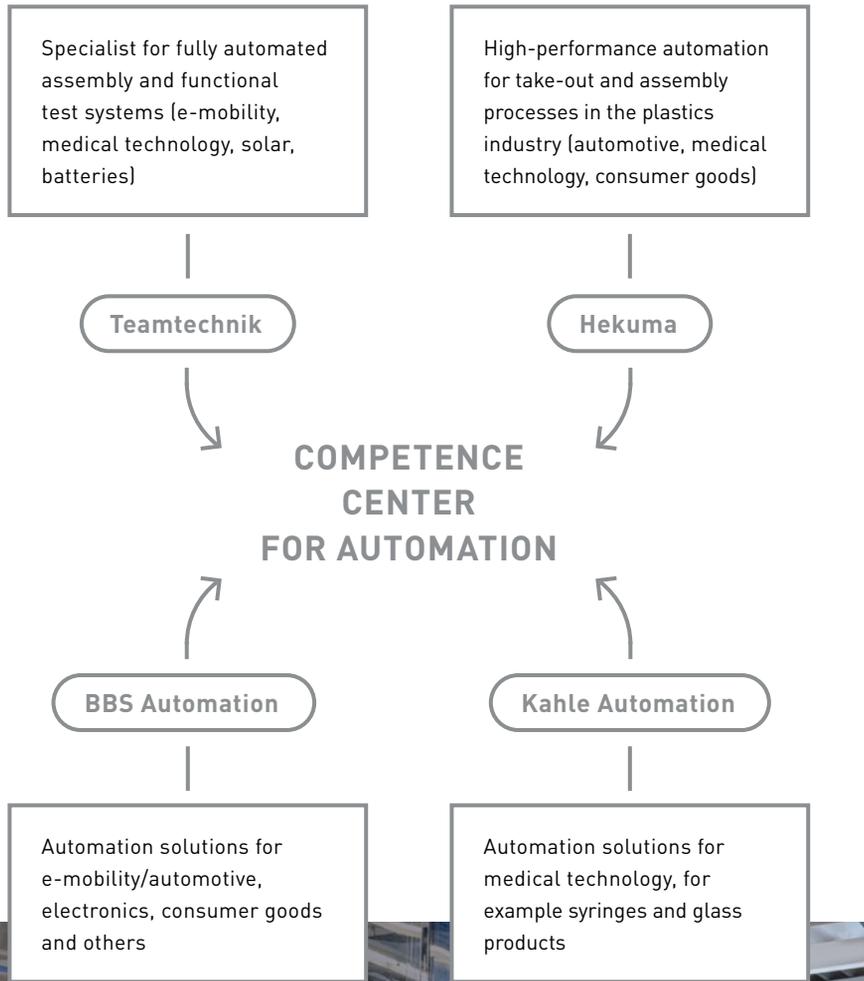
With these four subsidiaries, the Group is moving to the forefront of the global automation industry and tapping into a rapidly growing business segment. “This opens up promising prospects for growth in sales and earnings, as we all benefit equally from better customer access and efficient engineering and production capacities,” says Josef Wildgruber, CEO of BBS Automation and head of the new business unit. In this way it becomes possible to map increasingly complex processes, for example using artificial intelligence and large amounts of data.

Automated production can solve many of the challenges the industry is facing worldwide. These include the shortage of skilled labor, which is now also being felt in Asia and Latin America and can be addressed with autonomous technology. Automated production also ensures the consistently high product quality that customers demand, even with large production volumes.

The world’s growing population is also driving the trend toward automation. At the same time, as prosperity increases in key regions and purchasing power rises, so does the demand for everyday necessities. These include a wide range of products — from hearing aids to insulin pens. The result: The industry is ramping up



All systems green? A test stand for electric drives is set up at Teamtechnik.



The fully automated systems from BBS Automation can be used to assemble a wide variety of products.

production in order to manufacture higher quantities. To do so, it relies on automated machines and systems.

Technologies complement each other

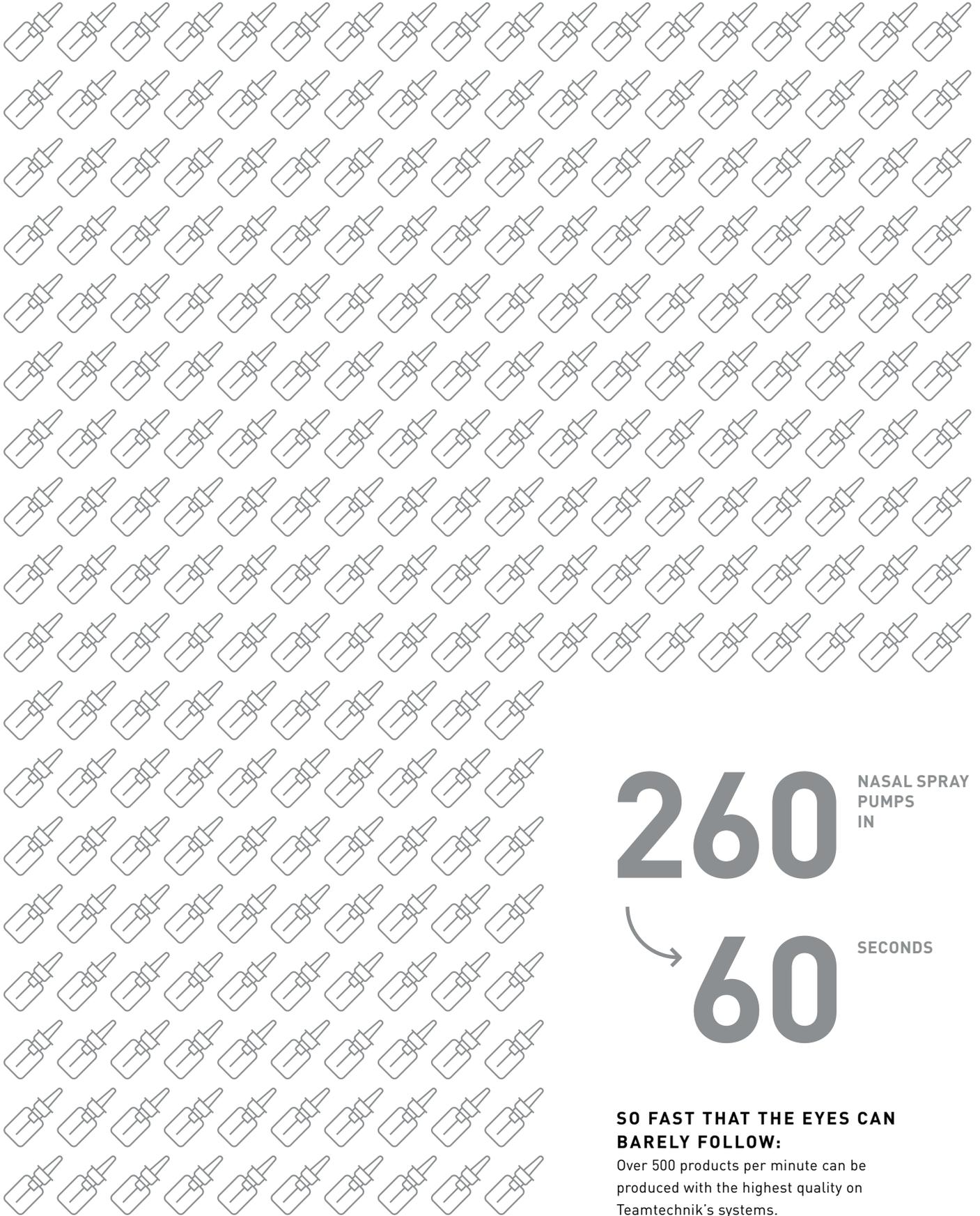
The Group's four new automation subsidiaries complement each other with their different focuses. BBS Automation specializes in assembly technology. More than half of its sales are generated with systems for the automotive industry, which are used to manufacture electrical components, batteries, brake components, and lighting components, among other things. Kahle supplies machines for manufacturing products with a needle, such as syringes.

In contrast to BBS Automation, Hekuma serves a niche market. The company specializes in systems that take out parts from injection molding machines. These include pipette tips or caps, which are produced by the millions. Grippers take the freshly molded parts out of their molds at lightning speed. Faster than parts would fall out under the force of gravity. "In some cases, the daily production volume can be doubled in this way," says Bäurle.

Finally, Teamtechnik in Freiberg am Neckar is an expert in assembly and functional test systems – for automotive transmissions and electric car drives, for example. The company also plays a leading role in medical technology. Its product range includes systems for manufacturing injection systems, infusion sets, and disposable contact lenses. They are designed so that a test step is carried out after each operation. Sensors or image processing systems check the result of the preceding process to ensure that only functional products come out of the system at the end.

New competence center

The Group has created the Production Automation Systems business unit, to which the four acquired companies will contribute their expertise. "Our customers benefit from this because the market is very fragmented," explains Bäurle. If, for example, a new automotive manufacturer in North America or China is planning a production facility that includes the entire electric power train, he can now get everything from a single source: from assembly to functional and quality testing at the end of production. And he doesn't have to worry that the technologies aren't compatible.



260 NASAL SPRAY PUMPS IN
↪ **60** SECONDS

SO FAST THAT THE EYES CAN BARELY FOLLOW:

Over 500 products per minute can be produced with the highest quality on Teamtechnik's systems.

Fast, precise, and fully automated

100 million

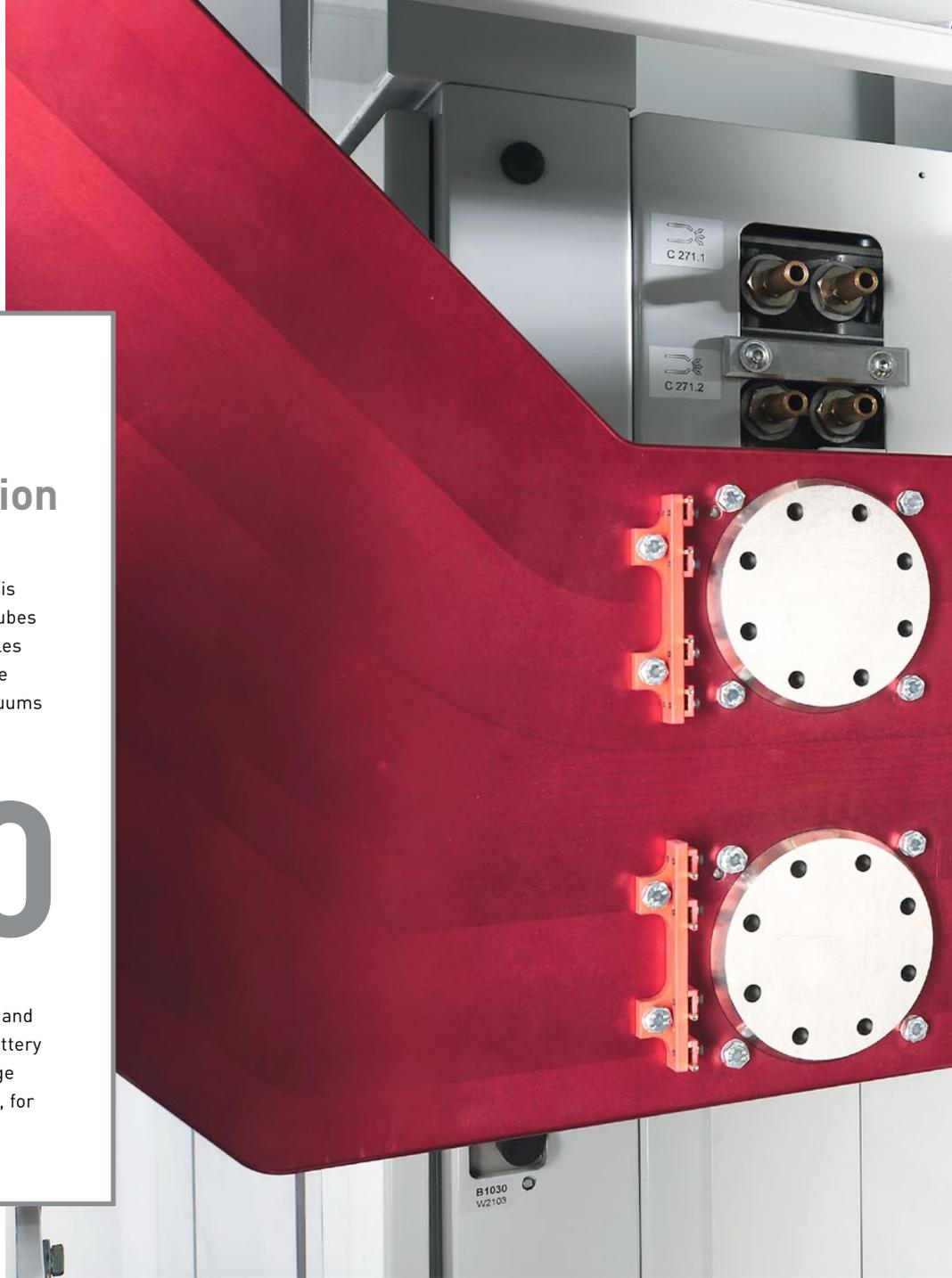
PIECES A YEAR

Blood is typically tested for medical analysis in the laboratory. The number of plastic tubes needed to collect and prepare blood samples is enormous. Hekuma's high-performance automation technology processes and vacuums the blood tubes at top speed.

7,200

BATTERY CELLS PER HOUR

are processed by Teamtechnik's assembly and test systems. These are used to create battery modules that are installed in home storage systems, power tools, or electric vehicles, for example.



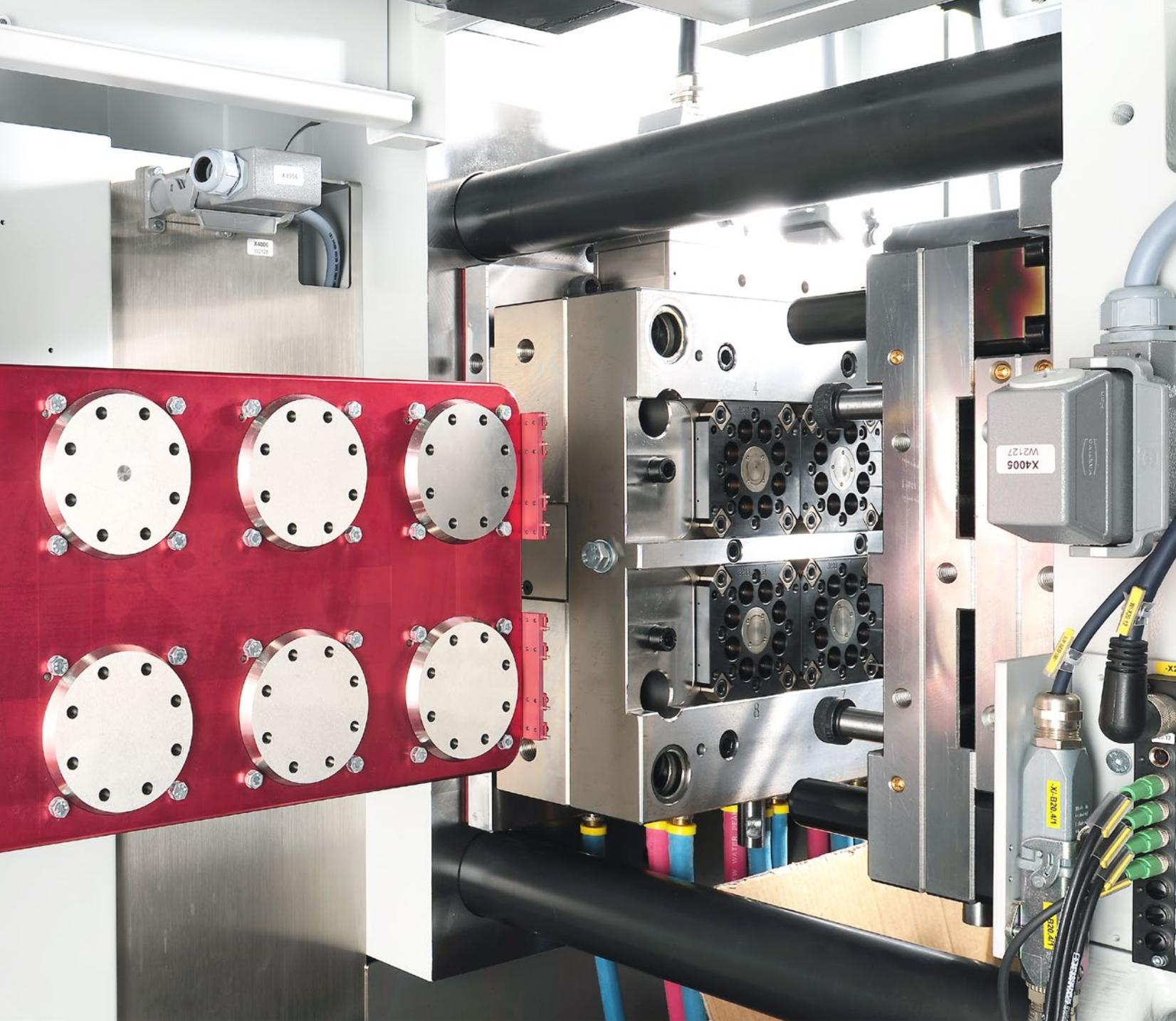
The parent company is also contributing its know-how to the new competence center, as Dürr has been planning and implementing major projects for decades. This experience pays off. After all, even small errors in the complex setup of automated production can cost a lot of money. A group with know-how that is available worldwide offers its customers the certainty that their orders will be successfully implemented.

Under the Dürr Group umbrella, the subsidiaries also enjoy advantages in purchasing. “In

order to automate processes, similar parts are often installed, regardless of what the system is used for,” explains Bäurle. Almost all automation solutions require pneumatic cylinders, control electronics, or measurement technology such as cameras or sensors. Requirements for these components can now be bundled to achieve more favorable purchase prices.

Dürr as a door opener

Since BBS Automation and Teamtechnik generate a large part of their sales in the automotive industry, there are further advantages.



Dürr has maintained good relationships with the major manufacturers for decades. Contacts up to board level can open doors for smaller partners.

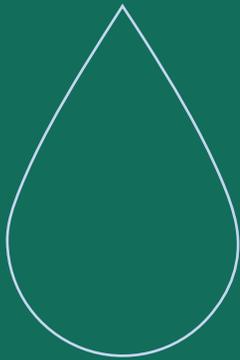
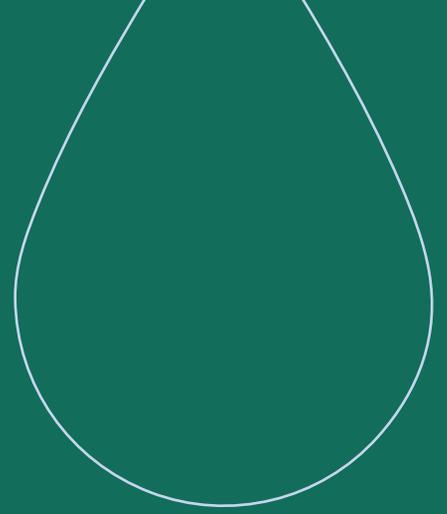
The entire Group is broadening its base with automation technologies and opening up new business areas in addition to the automotive industry. Medical technology, for example, is a promising growth market for the Group that is less dependent on the economy than the automotive industry. “The last thing people usually cut back on is their health,” says Bäurle.

The medical technology business is also driven by the growing number of people suffering from chronic diseases such as diabetes. Nearly half a billion people worldwide are affected. Many of them have to inject themselves regularly with insulin. Injection pens or automatic pumps that are worn on the body enable patients to go about their daily lives without major restrictions. Bäurle explains that, due to the growing demand, ever larger quantities have to be produced. “Teamtechnik has been building the fully automated production systems for this for years.”

Take-out technology from Hekuma: Plastic components are taken out of the injection mold in a matter of seconds.

Teamwork is the cure

Teamwork is the cure



Process knowledge
meets digital expertise:
A conversation with
Oliver Iglauer-Angrik
and Imke Kuschel.

He is responsible for the process, while she takes care of the software. Oliver Iglauer-Angrik and Imke Kuschel work on the further development and optimization of drying processes for paint systems. A collaboration where boundaries blur — even between the generations.

TEXT: HEIMO FISCHER — PHOTOS: SASCHA FEUSTER

You work together on new products, for example on paint curing ovens. How do your roles differ?

IMKE KUSCHEL I work in Dürr's digital factory, where we develop software to make machines and systems more efficient and sustainable. But I don't do any programming myself; instead, I work at the interfaces with process experts like Oliver and with our customers.

OLIVER IGLAUER-ANGRIK In my role as senior expert, I am the Group's global contact point for paint curing ovens. I have been involved in this area for 25 years. Nowadays, the development of new drying processes can no longer be separated from their digitalization, as we aim to align both aspects with practical customer needs right from the outset. I see my task in working with the digital factory as rethinking processes digitally while keeping an eye on the added value for the customer. Imke is an important point of contact here.

What kind of innovations are you working on?

I-A One example is the **EcoInCure** paint curing oven — a product that was launched on the market in 2016. It allows hot air to flow into the car body through the windshield opening. This innovative technology enables us to dry complex car bodies faster and more gently, while providing better paint quality. But what was still missing in our view was the digital proof of the drying process — a highlight that has been part of our product portfolio since 2020.

What exactly have you come up with?

K We have developed simulation software that analyzes a large amount of data. This allows the

paint curing process to be digitally mapped for each car body, starting as early as the production run. This enables an automaker to monitor the quality of the curing process for each individual car body at any time. The software can provide this for any car body model that passes through the oven.

What advantages does the software offer?

K In normal operation, our software offers the operator the option to map all body-specific heating parameters. This is used, for example, for documentation in the event of subsequent paint or rust-through warranty claims.

In addition, the oven simulation serves as a decision-making aid to determine whether the paint quality is acceptable or not after process faults have occurred. In the past, in cases of doubt, a car body would continue to be painted after a disruption. It was only discovered at the end of the painting line that the body couldn't be used due to insufficient quality. With our software, car bodies are now immediately removed from the process, thus avoiding any unnecessary further painting. This saves time during analysis and conserves valuable resources.

Is sustainability a personal concern for you?

I-A Using the world's resources responsibly is important to me. I'm not the only one who feels this way. I meet many people in the Group who hold the same belief. It is important to me that the concept of sustainability is also an integral part of our "One Vision" corporate statement and must therefore be considered from the outset when developing new products or production processes.

“Using the world's resources responsibly is important to me.”

OLIVER IGLAUER-ANGRIK,
SENIOR EXPERT
RESEARCH & DEVELOPMENT AT DÜRR

K When we develop software in the digital factory, the sustainability aspect plays a prominent role. We also want to convey this to our customers: Opting for software that conserves resources and increases efficiency is an important investment.



You have grown up in the digital world, Ms. Kuschel, and have been with Dürr for five years. Mr. Iglauer-Angrik has been with the company five times longer. How does this affect your cooperation with an old-school mechanical engineer?

K The age difference isn't an issue in our cooperation. In fact, we benefit from each other's expertise. Oliver shares his process and system knowledge around paint curing ovens, while our contribution relates to mathematical correlations and data expertise.

I-A That's the great advantage of a company like Dürr: the combination of digital know-how with expert knowledge of production processes. We cooperate very closely at our working level, learn a lot from each other, and can therefore take an effective interdisciplinary approach — perhaps more than other companies.



IMKE KUSCHEL is 34 years old and studied technical cybernetics, a subject that deals with mathematical modeling, simulation, and control of complex systems. At Dürr's digital factory, she works as a member of a scrum team at the interface between process experts and programming specialists. Her extensive product knowledge and specialist expertise in the software field are prerequisites for translating process requirements into functional software in collaboration with the programmers. She is also responsible for implementing and commissioning software from Dürr's DXQ product family at the customer's site.



OLIVER IGLAUER-ANGRIK is 55 years old and has been with Dürr for 25 years. Having studied mechanical engineering, he has held various positions in the company and now works in research and development as a senior expert for drying technology. In addition to heating the bodies of painted electric vehicles, his work focuses on efficiency enhancement and electrification of drying and exhaust-air purification systems in the context of CO₂-neutral paint shops. Here, he combines expert knowledge of production processes with digital expertise. His exploration of thermodynamics also led him to teach at the Baden-Württemberg Cooperative State University for several years.

K It starts with communication and understanding. When Oliver and I began working together, we explained the technical terms of our respective fields to each other.

I-A Web Frontend, NoSQL database, Red Hat — the exact meaning of terms like these have only become clear to me over time and, just like learning vocabulary in a foreign language, I am always learning new things here as well.

K I, on the other hand, have learned quite a lot about paint curing ovens. Heat transfer coefficients, air balance, Bernoulli's equation, centralized and decentralized heating concepts — all of these were unfamiliar territory for me. I am now the expert on ovens in the digital factory.

“The age difference isn't an issue in our cooperation. In fact, we benefit from each other's expertise.”

IMKE KUSCHEL,
SOFTWARE COMMISSIONING ENGINEER
AT DÜRR

Can you name a situation where you complemented each other exceptionally well?

I-A In one customer's paint shop, our simulation tool detected unusual heating behavior during measurement runs performed on an oven. We couldn't work out why. We spent a long time looking for a theoretical explanation but couldn't find one. Imke then proposed that we have a look on site.

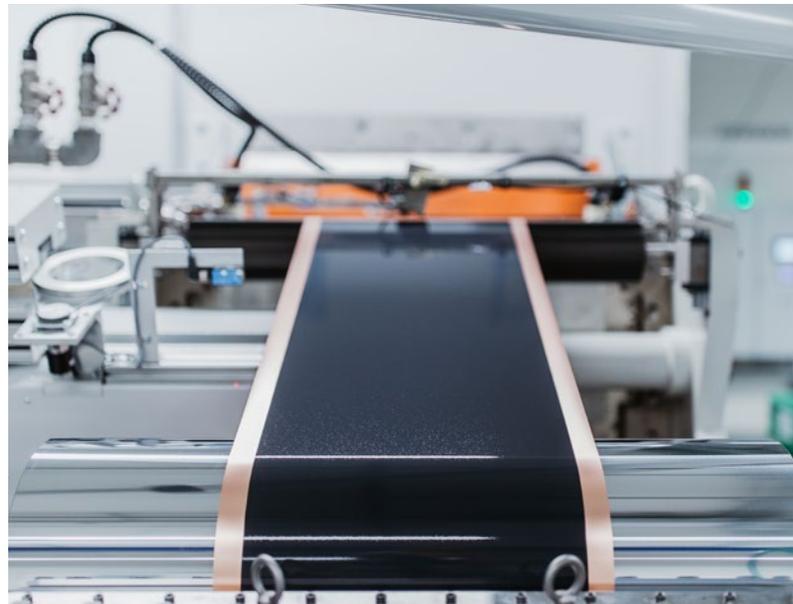
K In the plant, we noticed that a worker was alternating the position of the sensors for the oven measurement runs each week between the driver's and the passenger's side.

I-A This example illustrates how important mutual exchange is for solving problems. We would have probably kept searching for a theoretical explanation for some time. Imke's suggestion prompted us to look outside the box together.

A factory made in Europe

Together with its partners Grob and Manz, Dürr will offer complete battery factories in the future. In doing so, they will cover the entire value chain from the cell to the finished storage unit. The range of technologies required for this is a unique selling point of this business partnership — no other European provider has a comparable offering.

TEXT: HEIMO FISCHER — PHOTOS: DÜRR



Shift work: The drying process follows shortly after electrode coating.

The visit to the battery factory takes place with a bird's-eye view, as it currently only exists as a video animation. But its construction from a single source can now become a reality. In their cooperation, each of the three companies contributes its expertise. This enables the entire battery production value chain to be mapped — from the cell through to integration into the vehicle.

So far, only Asian companies have been able to supply complete production facilities for lithium-ion batteries. Joining forces, the Dürr, Grob, and Manz trio is now the first European supplier to enter this field. “We are particularly focused on the needs of the automotive industry, which places high demands on safety and quality,” says Dr. Hannes Schmäuser, CEO of Dürr’s

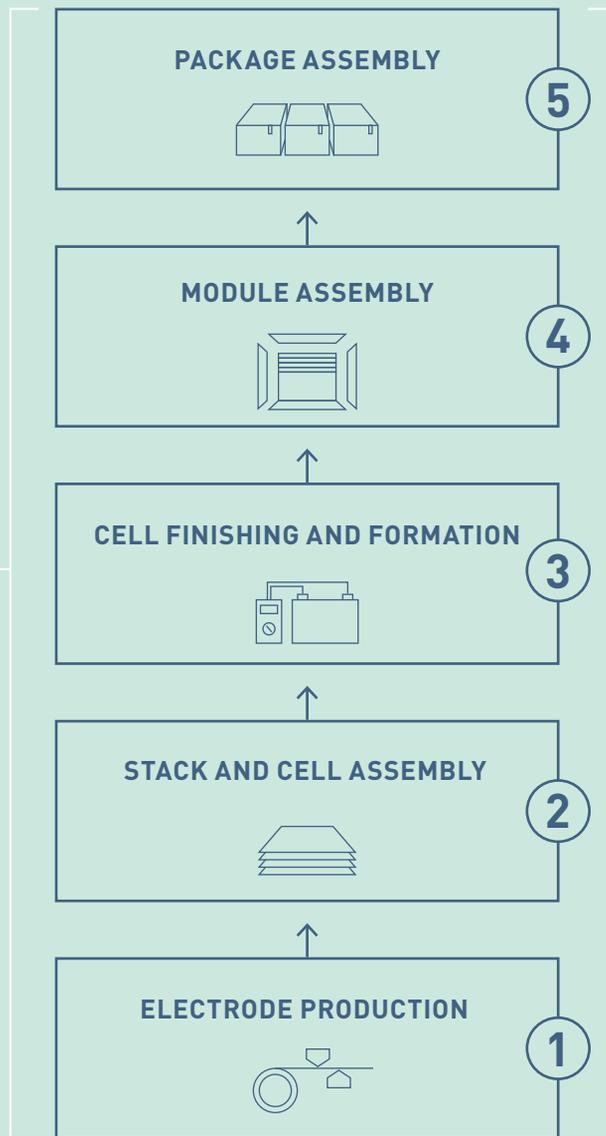
Clean Technology Systems division, to which this business area belongs. Since the demand for electric cars really took off, new battery factories have been emerging worldwide — in Europe alone, around 60 projects were being planned in 20 countries by the end of 2023.

The factory has been jointly designed by Dürr, Grob, and Manz. The digital production management comes from Dürr’s own software subsidiary iTAC. The end of 2023 saw a further expansion of competencies: With the acquisition of the French mechanical engineering company Ingecal and a new partnership with the US coating expert LiCAP, Dürr has increased its technology portfolio for electrode coating. Dürr Consulting advises clients on factory planning, site selection, and ongoing production.

“We are particularly focused on the needs of the automotive industry, which places high demands on safety and quality.”

DR. HANNES SCHMÜSER,
CEO OF THE CLEAN
TECHNOLOGY SYSTEMS DIVISION

SMART
FACTORY



DÜRR

GROB

MANZ

BATTERY PRODUCTION PROCESS

DÜRR CONSULTING

BATTERY FACTS



1800

**PHYSICIST
ALESSANDRO VOLTA**
invented the battery

Around 1830

**BATTERIES WERE
USED IN TECHNOLOGY,**
for example for
powering telegraphs

Around 1832

**ROBERT ANDERSON
BUILT THE
"ELECTRIC CARRIAGE",**
which is considered the
first electric car in history

38%

**OF CARS IN THE
UNITED STATES WERE
ELECTRIC VEHICLES
AROUND 1900**
(40% steam-powered,
22% running on gasoline)

100 km/h

SPEED RECORD:
Until 1920, the electric car
was a real competitor
to vehicles with internal
combustion engines

4,900

**GIGAWATT-HOURS
OF BATTERY
STORAGE CAPACITY**
to be produced
annually from 2030

Challenging processes

Manufacturing battery cells is a demanding undertaking. Therefore, Dürr and its partners offer customers comprehensive advice, which is essential for the factory setup. It is also about deciding which batteries to produce in the first place. "Depending on their purpose, battery storage units have different compositions and shapes. They can be flat, prism-shaped, or cylindrical," explains Yannick Wildermuth, who is providing strategic support for the project.

Every battery has a negative pole (cathode) and a positive pole (anode). Today, the anodes of lithium-ion batteries are made from graphite and carbon, while the cathode is made from a mixture of lithium, nickel, and other metals. However, mixtures such as iron phosphates will also become more widely used in the future. Therefore, each factory must be completely customized.

Stirred, not shaken

The source materials are powders that are stirred to form pastes and applied to copper or aluminum foil. The coated foils pass through a dryer before a roller presses them together using several tons of pressure. The foil is then cut into longitudinal strips. This material is later turned into a battery cell.

Dürr provides the expertise and technology for this first production stage. Coating and drying are also relevant in painting technology, although the processes are of course not identical. Dürr also knows a thing or two about exhaust-air purification – it is important in battery production because harmful solvents are as yet indispensable.

When the foils are ready, systems from the partner companies Manz and Grob come into play. A machine cuts the strips to the exact length and stacks them on top of each other – alternating between copper foil (anode) and aluminum foil (cathode). A piece of separator foil is always added in-between for insulation – similar to layering lasagna.

This is followed by rolling, cutting, gluing, welding, or sealing – depending on the final shape the battery should have. What is still

missing is the electrolyte, a liquid that ensures ions can move back and forth between the positive and negative poles during charging and discharging.

The energy is rising

There is no life in the cell yet. It is electrically charged during the formation. Only cells of the right quality and maturity are to be processed further. This involves work steps that vary depending on the type of battery and are covered by technology from Dürr, Grob, or Manz.

The battery cell must be fully sealed. Moisture must not penetrate, nor must the electrolyte escape. Testing of the electrical properties concludes the cell production process. The tests are performed by machines from the Group's subsidiary Teamtechnik.

The cells are then ready for dispatch. In most cases, they are assembled into modules at other locations, then interconnected into battery packs and installed in the vehicle. These work steps are also performed by machines and systems from the three partners.

A new, dry process

Battery technology is constantly evolving. With the acquisition of Ingecal, Dürr can now also supply calendaring systems, which play a central role in the coating of electrode foils. At the moment, experts in the field are also working on what is known as dry coating. Dürr's new partner LiCAP has developed a method for producing electrodes without the use of liquid material. "The material is compressed under pressure and then laminated onto the metal foil," says Wildermuth. The resource-intensive drying of materials after coating is eliminated, reducing the factory's energy consumption.

Dry coating is also a milestone on the way to solid-state batteries, where the electrolyte consists of solid material, making them more powerful, safer, and more climate-friendly than their predecessors. It is regarded as the next major innovation step in battery technology – and it will also be available in a factory from the Dürr, Grob, and Manz partnership in the future.



BIG IN JAPAN

日の丸と、一丸に。

Dürr employees from Germany and Japan have jointly mastered a challenging technical project. Karaoke also contributed to the understanding between the cultures.

TEXT: STEPHAN KÖHNLEIN — ILLUSTRATIONS: MARI LUOMA

“Germans can be very direct sometimes. I had to translate that into a less direct language.”

JUNICHI SAITO,
SALES DIRECTOR AT DÜRR JAPAN



While singing in the city's karaoke bars, the German-Japanese team got to know each other from a different perspective.

Ulrich Noé is a man for difficult cases. As a senior project manager, he does not shy away from challenging major projects. His work for Dürr has already taken him to Japan several times. However, he and his team members were faced with one project that presented them with new technical and cultural challenges.

Dürr was to build a complete painting line for an automotive manufacturer in Japan. For the Japanese colleagues around Junichi Saito and Shingo Hirata, the scope of the order was a first. Dürr had already completed major projects of this kind in many countries around the world – but never before in Japan. A team from Germany was therefore sent to provide on-site support.

COVID got in the way of the travel plans

Normally, the employees on the construction site can look forward to a trip home to see family and friends every six to eight weeks. During this time, they are replaced by suitable colleagues. However, severe restrictions during the coronavirus pandemic made this difficult. Travel restrictions prevented both scheduled

rotations and multiple entries and exits. As a result, Noé and two of his German team members stayed in Japan for six months. This intense time strengthened mutual understanding and relationships between colleagues from both countries.

Saito joined Dürr Japan in 2019 and works there as a sales director. He was the crucial link to the customer in the project. He knows Germany from several visits and has found the people to be very interested in culture and history – and even discovered his enthusiasm for blood sausage, as he says with a smile. When it comes to professional life, he appreciates the reliability and technical expertise of the Germans, who, in his experience, are also very efficiency-oriented.

“The Japanese are really enthusiastic about technology and want to understand everything from the ground up,” says Noé. At every step, they want to see if something works and, more importantly, how it works. The Japanese’s understanding of details is a great advantage, as it constantly creates innovations or improves existing products – making Japan’s industry one of the best in the world.



A painting line as a comic strip:
The drawing comes before construction.

“The Japanese are really enthusiastic about technology and want to understand everything from the ground up.”

ULRICH NOÉ,
SENIOR PROJECT MANAGER AT DÜRR

Safety first

The Japanese also pay attention to detail when it comes to safety. Every single aspect is described in pictures and must be followed. To this end, safety drawings in the style of manga comics were prepared for all transportation and work steps, and these drawings had to be approved by the customer. “If the details of the drawing don’t match those of the construction site, work is sometimes stopped,” recalls Noé.

In Japan, the customer sets the pace. “It can sometimes be difficult when you can’t discuss things on an eye-to-eye level but can only make recommendations.” This was also a challenge for Saito. “In Japan, when the customer decides something, then that’s the way it is. My German colleagues didn’t always understand that,” he explains. He often had to mediate. “I said: ‘If you have a problem, come to me and I will talk to the customer.’ Germans can be very direct sometimes. I had to translate that into a less direct language.”

Karaoke was a great help in making contact with the Japanese colleagues and the customer. “I didn’t expect this, but for me it was the only way to get to know people outside of work,” says Noé. The Japanese work hard, often

twelve hours or more a day. “But they relax in the karaoke bar.” Saito agrees that karaoke brought the project participants closer together: “I’m certainly not a gifted singer, but karaoke is a great way to strengthen personal relationships,” he says.

Catchy tunes from the record player

Noé specialized in songs by Elvis Presley and Frank Sinatra. But the German 1970s band Dschinghis Khan is also popular in Japan. And when the opportunity arose, he sang the classic Alphaville song “Big in Japan” — even though it is hardly known in the country, as Saito points out. Upon his return to Germany, Noé bought his own karaoke set. “Singing gives you back your energy,” he says. “That’s one of the many insights I brought back from Japan.”

For this successful project, the team was presented with the Heinz Dürr Award in the “Customer Experience” category in 2022. The German and the Japanese colleagues also gained many insights into each other’s cultures. The customer was satisfied with the German-Japanese team as well — a second painting line has already been ordered.



Ulrich Noé and the team appreciated the culinary specialties of the regional cuisine.



TOP 3 KARAOKE BARS

BIG ECHO

This karaoke chain has numerous locations across Japan and offers a large repertoire of English and Japanese songs.

KARAOKEKAN

A lively atmosphere and a wide selection of songs await karaoke singers at KaraokeKan. It is among the oldest and best-known karaoke chains in Japan.

UTA HIROBA

Uta Hiroba can also be found in many cities. Here, singing can be enjoyed in modern spaces and with the help of high-quality audio equipment.

BETTER TOGETHER



CLEAR AS DAY

It's the battery that makes the flashlight shine. Dürr helps to ensure that there are enough batteries by supplying important technologies for electrode production. With powerful and rechargeable batteries, many things can be moved and operated in a more climate-friendly way than with internal combustion engines: from cars and construction machinery to aircraft.

VOCATIONAL TRAINING: SHAPING TOMORROW,



STARTING TODAY

Well-trained, skilled workers are more sought-after than ever. The Dürr Group offers young people a wide range of vocational training opportunities with attractive prospects. Former and current apprentices share their experiences over four decades. Why did they opt for an apprenticeship? Why did they come to Dürr? What do they appreciate most about their company? Even though the professional world is in constant flux and a lot has changed over the years, they do still find some common ground.

TEXT: STEPHAN KÖHNLEIN — PHOTOS: SASCHA FEUSTER

Thinking back to her apprenticeship as an industrial clerk at Dürr, Sabine Hillebrand notices one change in particular: “When I started at the age of 17, I was very shy and reserved. Today’s apprentices are much more self-confident,” she says. “Back then, when I had to negotiate something in the purchasing department, I preferred to go to an office where nobody could overhear me. Young people today aren’t worried about that. They approach these tasks completely openly and without reservations.”

Hillebrand’s apprenticeship was around 40 years ago now. She has spent her entire professional life at Dürr. Only once did she put her feelers out to other companies. But her former boss brought her into his department and a potential move was off the table. This loyalty to Dürr is not an isolated case. She says, not without pride, that three of the four commercial apprentices who started with her back then are still with the company today.

Many paths lead to the Dürr Group

Hillebrand originally wanted to become a bank clerk. But that didn’t work out. Since her father was a department manager at Dürr, she also ended up applying there. That is what connects Hillebrand to Lea Ruof, whose father works for Dürr’s subsidiary Teamtechnik. “That’s why the company was also on my radar,” says the 22-year-old, who is training to become an industrial clerk.

Ruof embodies the young, self-confident generation of apprentices. What she appreciates about Dürr is that she can get involved in many different ways and take on responsibility in projects. During her time in the HR department, for example, she was involved in selecting candidates for the trainee program. In the second year of her training, she completed a four-week work placement in the United States. After her apprenticeship, she first wants to gain professional experience at Dürr before pursuing further training. “I’m not sure yet whether to go for an advanced training qualification or a part-time degree,” she says.

Lena Heßlinger came to Teamtechnik through a school internship. “I live nearby, so it was a no-brainer that I would check it out,” she declares. “I really enjoyed the internship. That’s



Industrial clerks Lea Ruof (left) and Sabine Hillebrand share their experiences.

AT THE STARTING LINE

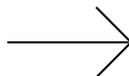
In 2023, the Dürr Group trained 467 young men and women at its German sites. 288 of them completed their vocational training at HOMAG Group AG. Dürr Systems AG had 96 vocational training participants, Teamtechnik 57, and Schenck 26.

In terms of occupational groups, the industrial/technical professions accounted for the largest share (285 apprentices), with mechatronics technicians being the largest subgroup (121). This was followed by students in work-study programs for technical subjects (114), commercial apprentices (48), and students in work-study programs for commercial subjects (20).



DO YOU ALSO WANT TO GET STARTED?

Find out about training opportunities at the Dürr Group.



why wanting to do my apprenticeship here was an easy decision for me.” She is now in her second year of training as an industrial mechanic – a profession in which women are still the minority, although she says they are steadily increasing in number. She is particularly enthusiastic about milling. In fact, she assures us that there hasn’t been anything in her apprenticeship so far that she hasn’t enjoyed.

Heßlinger also likes the fact that the apprentices at Teamtechnik have their own workshop where they can try out new things. When she compares this with her fellow vocational school students at other companies, this place is really something special. She can also work regularly in other Teamtechnik workshops. She was even on an assembly job in her first year of training. “That was quite cool.” Her plans for the future: “First settle in and gain some professional experience,” she says, then adds with a mischievous smile: “Maybe then I’ll make it to 40 years at Teamtechnik, too.”

It’s not just grades that count

The two training managers at Dürr and Teamtechnik, Hans-Uwe Klaiber and Marcel Rütten, emphasize that vocational training has a future. “It is especially in Germany, where we have few raw materials, that we need to score points with knowledge and skilled workers,” says Klaiber. He adds: “The German training system is a successful model that is copied all over the world.” Rütten points out that the highly complex equipment of Dürr and Teamtechnik requires a great deal of expertise and that it is therefore important to train skilled workers in-house, specifically for this purpose. In terms of technical training content, they have both observed a shift in focus. “The trend is moving toward more computer science and somewhat away from pure mechanical engineering,” says Klaiber.

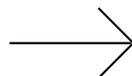
When selecting applicants, both of them look not only at the grades obtained in the main subjects, but also at other qualities such as behavior and participation. Internships or other forms of



Benefits of the training workshop: Malte Michelfelder and Lena Heßlinger hone their practical skills on a component.

“The German training system is a successful model that is copied all over the world.”

HANS-UWE KLAIBER,
TRAINING MANAGER AT DÜRR



“Even if you don’t like something at first, you gain experience and grow from it.”

MALTE MICHELFELDER,
TEAM LEADER ELECTRICAL ASSEMBLY AT TEAMTECHNIK

engagement also have a positive impact. In addition, the cover letter plays a major role. “The applicants should use it to refer to our company and thus demonstrate that they have made an effort to learn about us,” says Rütten. Trial work, in-house tests, and job interviews with the designated apprentices also play an important part in the further process. “After all, we want to see that it works for both sides,” explains Klaiber.

The right choice

Malte Michelfelder started his apprenticeship as a mechatronics technician at Teamtechnik in 2008. Afterward, he went through several departments, completed his master electrician certification alongside his job, and is now a team leader for electrical assembly. Like Sabine Hillebrand, he also thinks that today’s apprentices appear more confident. “When I see the topics they are already dealing with at the age of 16, I realize that they are much more mature and grown-up than we were back then.”

He adds that he always tells his apprentices how important motivation is — especially when it comes to things they may not enjoy as much. “Even if you don’t like something at first, you gain experience and grow from it,” he says. He admits that vocational school was a bit of an issue for him during his apprenticeship. He has this in common with Hillebrand, Ruof, and Heßlinger, none of whom are, or were, big fans of the school phases during their training. However, they don’t question its fundamental necessity.

All in all, Michelfelder says he has been able to experience and learn a lot of new things during his departmental changes. “It never got boring or tedious.” If he had to choose again, he would opt for the same career path. “I’ve never been a theorist,” he explains. “Despite my duties as team leader, I still do a lot of practical work. I wouldn’t be happy with a purely office-based job. Studying at university was never an option for me either. There’s absolutely no question for me: I would do an apprenticeship again.”



Marcel Rütten (left) and Hans-Uwe Klaiber are experienced in training young people.

WHAT DOES A SCRUM MASTER DO?

The most interesting conversations usually take place over coffee in the break room. There, Laura Manske tells us what she particularly likes about her job at the Dürr Group's subsidiary Schenck RoTec in Darmstadt — and why there is often cake.

TEXT: LAURA MANSKE — ILLUSTRATION: NIKLAS HUGHES



LAURA MANSKE

The industrial engineer has been working at Schenck RoTec since 2012. As a scrum master for software products, she works with her team to develop solutions for complex balancing machines. When things get hectic, she remains calm and guides the team through the sprints in a structured way.

When I tell people that I am a scrum master, the same keywords always come up. People say it's something like a mentor, organizer, or coach. In fact, that's all part of my role. I am responsible for making sure that the members of the scrum team can do a good job. I remove obstacles, mediate in case of disagreements, and optimize cooperation.

FROM RUGBY TO SOFTWARE DEVELOPMENT: WHAT DOES SCRUM MEAN?

The term has its origins in rugby, where players often huddle together in a scrum to gain possession of the ball.

In a figurative sense, scrum refers to an agile working method in project management. The method is used in software development in particular.

The scrum team huddles together to drive a project forward step by step in a self-organized manner and at fixed intervals (so-called sprints that last several weeks).

The three classic roles in the scrum organization are the scrum master, the product owner, and several developers.

When management asked me four years ago if I would like to join the software development team as a scrum master and team leader, I didn't think twice. Prior to that, after completing my work-study program as an industrial engineer, I had spent five years managing projects for the automotive industry at Schenck. That's how I knew that working with people suited me. It was time for something new.

To become a certified scrum master, I attended a training course and took an exam. We learned methods to improve processes, solve problems, or mediate between teams.

My day-to-day work consists of many meetings. It usually starts with the 15-minute daily scrum, where we gain an overview of the current status. Alongside me, the meeting is attended by the software development team and product owners, who keep an eye on customer requirements.

The members of a scrum team usually report to different superiors. The software products are developed in an interdisciplinary manner. For us, this involves either software for machines that have already been launched on the market or the new Schenck ONE software generation, which can be connected to the cloud.

We work with agile methods, because customer requirements change quickly and we want to offer customers the right software solution as early as possible. A conventional development process would take too long. That's why software is developed in three-week sprints. During this period, we must achieve an ambitious milestone at each stage.

After that, the newly developed software features are tested to see if they work. This is largely handled by colleagues from India, who are also part of our scrum teams. I really appreciate the international focus of my job.

Afterward, several new software features are delivered as a bundled software update. We incorporate user feedback within the next sprints and releases. Things can get hectic sometimes. If a piece of software isn't working properly, we need to find the error quickly. Overcoming a challenge like this together is a great experience that brings people together.

We also celebrate small successes as a team. When software has been successfully delivered, we have a "release cake". But I don't always bake this myself. Each time it is someone else's turn.

BETTER TOGETHER



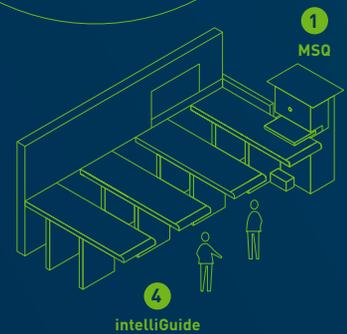
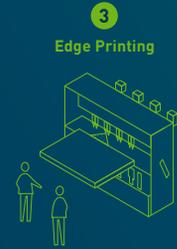
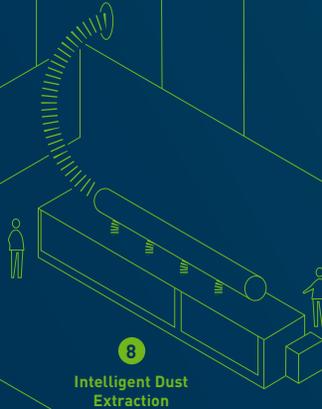
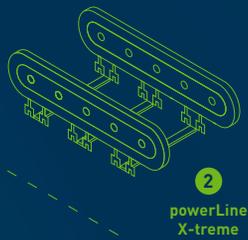
WOOD IS OUR WORLD

Technologies for wood processing are as integral to the HOMAG Group as the hammer is to the nail. The world market leader, which is part of the Dürr Group, equips workshops with individual machines, but also offers fully networked production lines for highly industrialized production. HOMAG machines are used to produce not only furniture but also components for climate-friendly timber houses. A cut above!

SECRET RESEARCH LABORATORY

In the factory of the future, HOMAG shows what the development teams are currently working on. Here people can experience the woodworking industry of the future at first hand. The Group subsidiary is thus also looking for new ideas – together with its customers.

TEXT: HEIMO FISCHER — PHOTOS: HOMAG



HOMAG's factory of the future is located 150 meters underground. Visitors are first plunged into the depths with an elevator and are later propelled through a vacuum tube from one station to the next. In hidden halls, travelers get a glimpse of tomorrow's products. They learn how processing times can be shortened, how manual saws can cut even more precisely, and how intelligent technology saves money and protects the climate. The tour of the future world of woodworking takes half an hour. Then the headsets are taken off again. Welcome back to the present.

The factory of the future, also known as the Innovation Center, is, of course, an illusion created by tiny LED lights and giant projection screens. The 400-square-meter labyrinth of partitions, backdrops, and movie theater seats was built for LIGNA 2023 — the world's largest trade fair for the woodworking market. HOMAG is at the forefront of this industry. The company supplies machines and systems for a wide range of businesses — from carpentry workshops to industrial furniture and timber house manufacturers with automated production lines.

The journey through time to the factory of the future is not just an entertaining event. Above all, it provides a setting in which customers and HOMAG experts can meet at eye level. "We want to get an even better feel for the industry and test how our innovations are received by customers," says Daniel Hofius, Marketing Manager Trade Fairs and Events. Together, they consider what challenges woodworking companies face and what technical solutions they need. The insights they gain together are incorporated into the development work at HOMAG.

But enough of the preliminaries. Hold on tight, the journey through time begins.



INNOVATION CENTER
In the laboratory of the future, visitors gain an insight into tomorrow's factory.



HAVING THE EDGE
An employee from the trade fair team demonstrates individual edge printing.

“We want to get an even better feel for the industry and test how our innovations are received by customers.”

DANIEL HOFIUS,
MARKETING MANAGER
GLOBAL FAIRS & EVENTS AT HOMAG

Faster and more accurate

The first step is about machine technology that makes cutting faster and more economical. This includes HOMAG's **1 Measuring System Cutting Quality (MSQ)**. It uses intelligent algorithms to automatically determine how accurately a saw blade is still working. Replacement can therefore be scheduled and is neither done too early nor too late. MSQ is currently used in automated systems. In the future, it may also be available for manual saws.

Greater efficiency is also provided by **2 Edge Printing**. This innovation also meets the increasing demand for individual design options. Edges, for example of shelves, can thus be printed separately and in high quality after they have been attached to the furniture part. The advantage: The furniture manufacturer no longer has to stock dozens of edge bands in different patterns and colors, but only a few neutral types.

The **3 powerLine X-treme** throughfeed drilling machine increases the speed of automated furniture production lines. In the future, parts will be accelerated and decelerated even faster as they are transported to the next processing station, further increasing machine throughput. This is made possible by an electromagnetic system that replaces the conventional belt drive.

The tension is rising. Now a virtual transport system takes you at the speed of sound to the next station – a deck with 3D simulations. Here, you can see machines that not only use tool and material data, but also self-adjust. A great advantage in times of skilled labor shortages.

The machine can do it all

The first product is an advanced version of the **4 intelliGuide** digital assistance system. It uses cameras to take pictures that are analyzed by software. If the machine operator inserts a panel incorrectly, a laser immediately projects an arrow symbol onto the workpiece. The arrow indicates the direction in which to rotate the panel. The operator stays focused on the panel and doesn't even have to look up at a monitor.

For even better detection and elimination of errors, IntelliGuide can be combined with other solutions, such as the MSQ mentioned above. Another option is **5 toleranceCheck**. This system detects the tension in the panel and indicates how the saw should be set to ensure the right cutting quality.

Errors can occur when gluing edges. For example, if the panel or glue temperature is unfavorable. In such cases, the **6 Digital Gluing** system tells the operator what to do or automatically adjusts the temperatures.

Machine and material data can be collected on a large scale. They indicate the condition of the technology. This allows measures to be initiated at an early stage in order to minimize disruptions and production downtimes. With the help of the **7 serviceAssist** system, it will even be possible to predict the optimum maintenance time in the future. This is done in close collaboration with the HOMAG service team, whose specialists plan all further steps together with the customer. In this way, operational safety and maximum machine and system availability are ensured. The virtual tour through the factory of the future continues.

Sustainable and climate-friendly

In addition to efficiency and quality, sustainability and climate protection will also be priorities for woodworking companies in the future. This is what the third room of the factory of the future is all about. One example: Furniture manufacturers often vacuum dust and chips from their production lines continuously, in some cases even when no workpiece

is being processed. This accounts for up to 30 percent of energy consumption. HOMAG's **8 Intelligent Dust Extraction** system is designed to ensure that only the amount of power required is provided.

Similarly, almost any modern machine can be operated in an energy-optimized manner. HOMAG's **9 energyGuide** supports companies in this endeavor. The software checks the settings during production and makes recommendations for action. In this way, energy guzzlers can be switched off.

We don't know the energy consumption of the elevator that brings the guests back to the surface. Never mind, this means of transportation is certainly economical. After all, it's just an illusion – unlike the products presented, which are already available now or will be in the near future.

SEEING CLEARLY
Using virtual reality glasses, visitors were able to take a look at the factory of the future.



BETTER TOGETHER
At the trade fair booth, HOMAG experts and customers discussed future possibilities in wood processing.



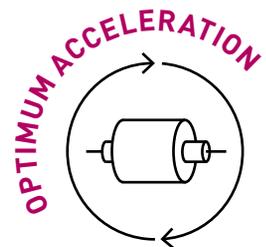
Finding the right balance

Rotating parts must run smoothly to minimize wear and vibration. Schenck RoTec supplies the right technology for this. Now, for the first time, the Dürr Group subsidiary facilitates connecting balancing machines to the cloud. This enables companies to work more easily and economically.

TEXT: HEIMO FISCHER — PHOTOS: THOMAS HOPPE, SCHENCK

Everything here revolves around balancing technology — Marcel Hug's specialty. The engineer and product manager leads us through the Schenck RoTec production hall in Darmstadt and stops at a test stand. "This is a model of the new generation of our balancing machines," he says. It uses networked data technology to make the balancing of rotors easier and more efficient.

When laypeople hear the term rotor, they often think of a wind turbine. In the engineering world, however, it refers to any part that rotates on an axis. Rotors can be found in many products, including heat pump fans, electric motors, giant power plant turbines, and tiny mechanical instruments such as dental drills. They can also be found in cutting-edge technologies such as hydrogen and fuel cell drives.

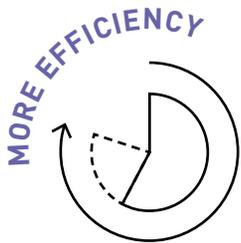


The automatic drive control accelerates the rotor in the shortest possible time to the pre-selected speed at which the unbalance is tested.

IN BALANCE
Even minimal unbalance in rotors is detected during the balancing process.



MULTITALENT IN ACTION
Marcel Hug and Rebekka Metz at the Pasio. The new machine generation handles rotors weighing up to 700 kilograms.



Balancing processes are fine-tuned and optimized through Schenck ONE: High-precision measurement technology meets user-friendly software.

It is not usually economically viable to produce rotors without unbalance. Even geometrically perfect parts have material density irregularities that are not visible from the outside. When these parts are rotated rapidly, the unbalance becomes noticeable in the form of centrifugal forces.

Manufacturers must therefore balance each rotor before installation. If they do not, vibrations will occur. This causes more than just annoying noise. “An unbalanced rotor causes wear in the bearings,” explains Hug.

The Darmstadt-based Group subsidiary has been dedicated to the development and production of balancing machines since 1907. Schenck has been driving further development for decades. Its customers include craft businesses, medium-sized companies, and global corporations with manually operated, partially or fully automated balancing machines. Now, another transformation in balancing technology is underway at Schenck RoTec.

Worldwide access

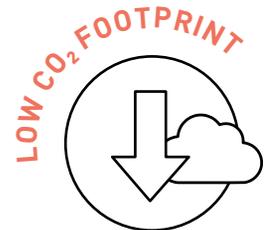
The new Schenck ONE software platform is a hybrid system that runs both as software on a machine and in the cloud. From now on, company employees will be able to access individual machines from any workplace. That is because the data is stored in the ecosystem and is available worldwide – strictly protected from unauthorized access.

Universal balancing machines have long been equipped with modern software. Until now, however, the data often only made it from the machine to the adjacent control cabinet, where it could be read out on the screen. Exporting the data to another location in the company was a laborious process.

But thanks to Schenck ONE, the cloud is growing together with the software world of individual balancing machines. The first generation of machines to which this applies is called Pasio. The largest model in this series can balance a



Connected worldwide:
With the Schenck ONE
software ecosystem,
machine data can
be accessed from
anywhere.



Throughout its life cycle
(manufacturing, trans-
portation, 15 years
of value-added use),
the machine emits no
more CO₂ than a per-
son's return flight from
Frankfurt to Shanghai.

wide range of rotors weighing up to 700 kilograms. This is more in the medium range. Some machines can even handle 350 tons.

Rebekka Metz from Business Development demonstrates how a balancing process with Schenck ONE works on one of the new Pasio machines. A test rotor is already in place. "It is now accelerated to 1,000 revolutions per minute," explains the mechanical engineer. Complex measurement technology analyzes how evenly the part rotates. The image of the rotor appears on the monitor with colored markings.

Would you like some more?

At first glance, you can see that six grams of weight must be added at a specific location on the rotor to ensure rotation without unbalance. This can be achieved by clamping, welding, screwing, or gluing. In other cases, the instruction may be to remove some weight. This is usually done by drilling a hole in the rotor at the location specified by the software. The program will also specify how deep the hole must be.

Thanks to Schenck ONE's cloud technology, the balancing machine data can be viewed from anywhere. Settings for a specific rotor type can thus also be transferred to other machines. In addition, balancing data is automatically documented and can be accessed in seconds at any time.

But Schenck ONE offers customers even more possibilities. When purchasing a balancing machine, companies now have to decide which software they want to have installed. Previously, updating or adding to the program was time-consuming, as it required an on-site service assignment by the customer service department. In the future, this will be possible in minutes via the cloud.

Staying flexible

Another advantage: Software features can be added flexibly. If a customer needs more functionalities at a later date, these can be loaded onto the machine via the cloud in no time at all. "It is like a simple software update," says expert Metz.

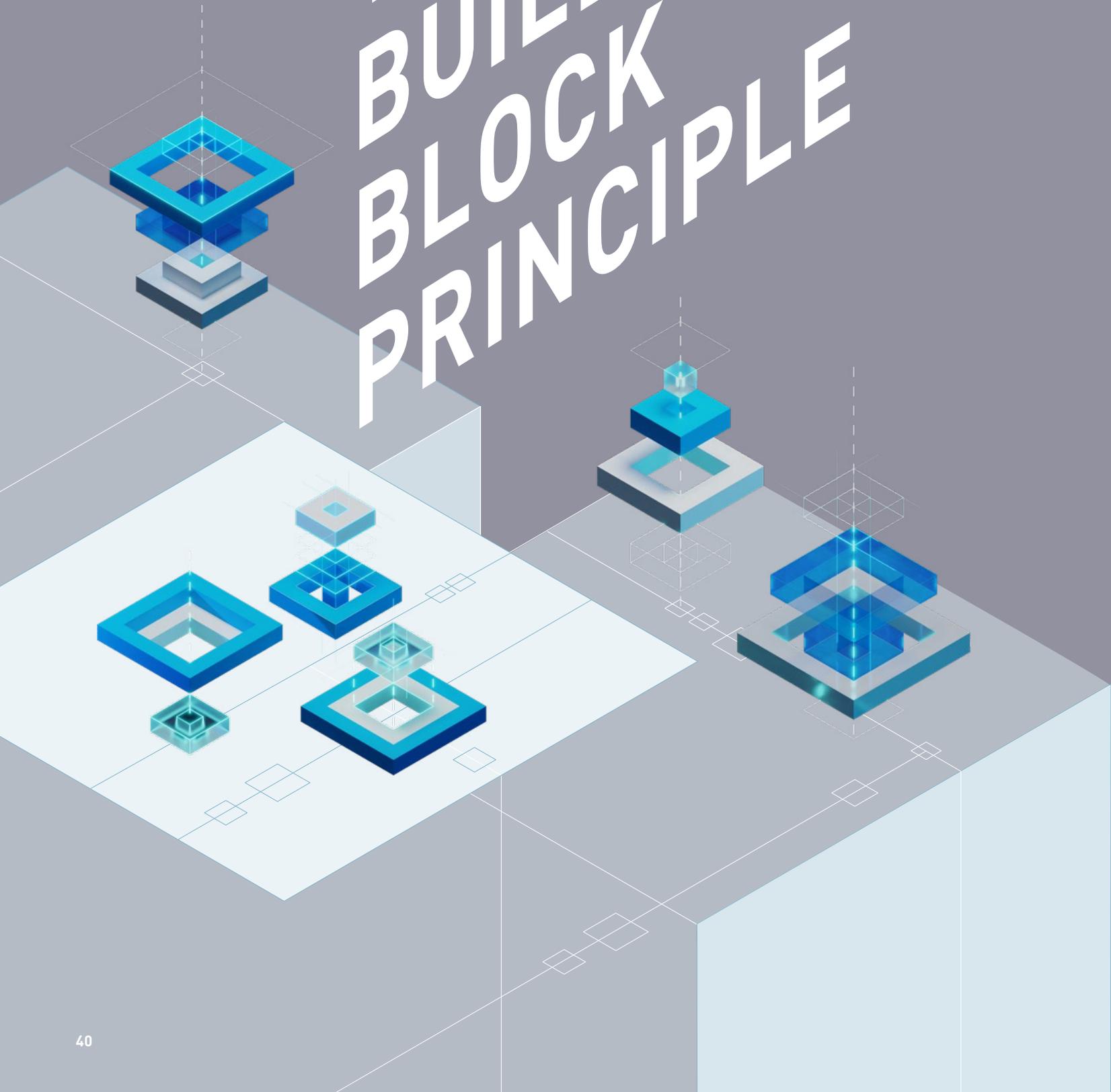
Over the next few years, more of the company's balancing machines will gradually be prepared for Schenck ONE. But no customer is forced to make the technological leap into the cloud. "Those who want to stay offline can still order the machine from us in the future," says Hug. And if you're not sure yet, you also have this option. After all, every new machine equipped with Schenck ONE can be connected to the cloud at any later point in time. This allows companies to decide for themselves when they want to make the technological leap.

INSTANT CLARITY

The unbalance of the tested rotor is determined directly by the Schenck ONE software.



THE BUILDING BLOCK PRINCIPLE



Every industrial company ticks differently. With Dürr's new manufacturing management software, customers can always design their production according to their preferences — by assembling individual modules like building blocks.

TEXT: HEIMO FISCHER

Software has become an integral part of manufacturing. For decades, it has been controlling production, recording data, analyzing, monitoring, or assisting in planning or traceability. Sounds good but it does have one drawback: Over time, numerous isolated solutions accumulate that are difficult to modify and make the system inflexible. This can lead to problems. One example: An automaker wants to install a new application to optimize energy consumption on its assembly line. However, the software is difficult to integrate into the evolved system and cannot fully leverage its strengths in combination with other modules.

Dürr software experts have found a way to avoid such problems. Together with the Group's subsidiary iTAC, a state-of-the-art software architecture has been developed that enables a flexible solution with open interfaces. The overall product consists of modular components that can be provided as a tailored solution for the customer. The joint success is based on decades of expertise of Dürr and iTAC in software development.

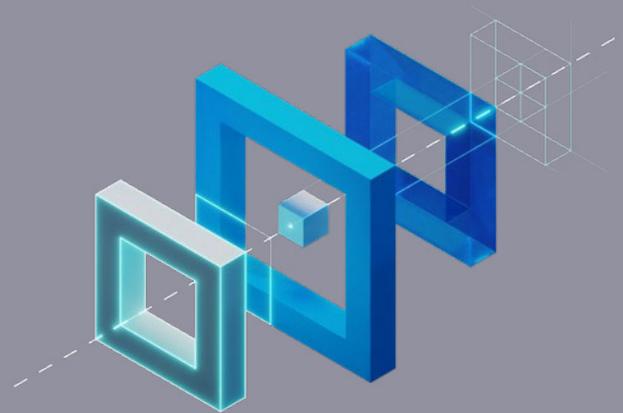
The new Manufacturing Operations Management (MOM) bundles functionalities that Dürr and iTAC previously offered as independent monolithic solutions. Now a single, integrated system can encompass countless combinations of modules and features that are used in the customer's production: It records data, analyzes it, and makes it available. Production is controlled and monitored, and the ongoing processes can be displayed graphically. This type of flexible solution makes it possible to adapt more quickly to unpredictabilities in the markets.

Modular architecture creates flexibility

Production management systems usually have a monolithic structure. This means that a single software product comprises a wide variety of functionalities that cannot be easily exchanged or updated. "In terms of IT security, this is a major problem," says Jens Rick, Product Manager at iTAC.

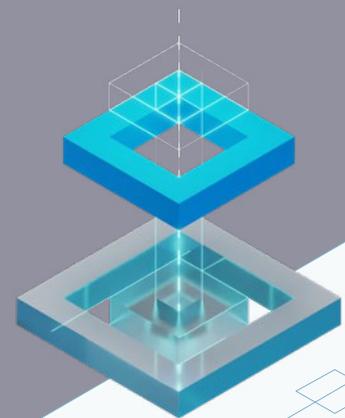
The MOM architecture follows a different approach. It uses microservices, i.e. applications that perform their tasks independently of each other. The individual applications speak the same language, can be exchanged at any time, and fit together — like building blocks that can be assembled in any combination.

The MOM architecture offers maximum flexibility for installation in a customer-specific IT infrastructure. Additionally, the microservices' open interfaces allow integration with third-party software or customer-specific developments. "For example, when customers want to use their own functions or those of another IT service provider," says Patrick Breuning, Senior Project Manager MOM at Dürr. This makes the software a modular, integrated, yet open solution. Companies can therefore easily set up a system that perfectly matches their needs.



INDIVIDUAL CONFIGURATION

Countless combinations of modules and features are possible. Microservices work autonomously, with open interfaces enabling the integration of third-party software.



ONE PLATFORM

MOM combines all modules that Dürr and iTAC previously offered as independent solutions into one system. As a result, they all work seamlessly together.

JOINING FORCES FOR THE GIGA- FACTORY



HOMAG's subsidiary WEINMANN supplies machines and systems for timber construction. The industrial production of multi-story buildings is playing an increasingly important role in this. Timber houses are climate-friendly, cost-effective, and on trend. When the Swiss start-up Nokera decides to build a gigafactory, WEINMANN is awarded the contract to equip it with facilities. The entire Group pitches in – and leads the project to success together with the customer.

TEXT: HEIMO FISCHER

PHOTOS: BERTRAM BOOS, SASCHA FEUSTER, NOKERA



The wall modules produced by Nokera await their deployment at the construction site.

The route to the large factory leads along gravel roads, past fields and sheep pastures. Even the navigation system doesn't always know its position. The industrial estate on the outskirts of the German city of Magdeburg is constantly growing. Finally, the blue hall appears, 700 meters long and 260 meters wide.

Since 2023, Nokera has been operating the world's largest factory for prefabricated houses here. It consists of six production lines. Robotic arms dance, and machines saw, drill, or nail so fast that the eyes can barely follow. Before long, the walls and ceilings for more than 20,000 prefabricated residential units made of timber are set to roll off the production line every year. Such quantities are unprecedented in the industry – and the key to the serial construction of cost-effective houses.

The production process is precisely coordinated. First, the framework – the skeleton of a wall, so to speak – is made of individual glued wooden beams. The elements, up to several meters high, are turned automatically, and the cavities are filled with insulating material and sealed. All exterior walls are given a decorative façade. Then everything is loaded and transported to the construction site for assembly.

Catalyst for transformation in the Swabian Alb region

With its modern factory, Nokera has not only set new standards for its own industry. 600 kilometers to the south, the project has also helped WEINMANN in its consistent further development. The HOMAG subsidiary in the Swabian Alb region is the world market leader in timber construction system technology. "We usually supply the prefabricated house industry as well as small and medium-sized carpentry businesses," says WEINMANN Managing Director Josef Zerle.

In 2020, WEINMANN received an order from Nokera to equip an entire factory with fully automated production lines. Machine equipment for serial house construction was not new territory for WEINMANN. But the scope of the project was.

As a global pioneer, Nokera wanted to manufacture modules for multi-story residential buildings made of timber on a production line in the centrally located city of Magdeburg. "It was clear to us right from the start that we would need assistance," says Zerle, not least because the WEINMANN workforce was already working at full capacity due to the buoyant construction

2020

PLANNING CONTRACT FOR THE SYSTEMS IN THE GIGAFACTORY AWARDED TO WEINMANN

2021

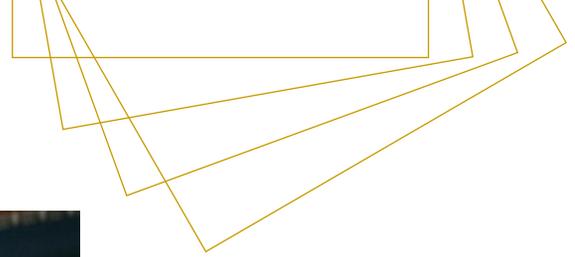
SUPPLY CONTRACT AWARDED TO WEINMANN AND START OF IMPLEMENTATION

2022

START OF ASSEMBLY OF THE MACHINES AND SYSTEMS

2023

LAUNCH OF PRODUCTION AT THE GIGAFACTORY NEAR MAGDEBURG



Success through collaboration: Precise coordination among the parties involved is essential for Jürgen Dörfeldt (left) and Josef Zerle.

market at the time. In addition, we were lacking the knowledge and capacity to plan and implement such a large project.

However, the WEINMANN management believed that the project could be realized if several Dürr Group companies combined their strengths. The Group's top management agreed and gave the go-ahead.

The major effort that followed initiated a transformation of WEINMANN within the Dürr Group. "We said from the outset that this order would showcase the overall competence of the Dürr Group and act as a catalyst for the introduction of new ways of working at WEINMANN," says Zerle. The experience gained from this large-scale order will pay off, as there are strong indications that further major orders of this kind will follow.

Timber construction is on trend

The proportion of housing built with timber has been growing for years. Around one in four new single-family homes in Germany is already built using this sustainable raw material. The share of multi-story buildings made of timber has almost doubled compared to 2020.

Prefabrication in series is sustainable — not only economically, but also ecologically, as wood stores climate-damaging CO₂ for a long period of time. It also offers solutions for the global shortage of skilled workers. Until now, most buildings have been constructed on site by hand. This costs working time and a lot of money. The factory produces timber buildings more efficiently and with consistently high quality.

Another growth driver for timber construction is the energy-efficient renovation of buildings. "Instead of gluing polystyrene panels to the house, it makes sense to use a mass-produced ecological wooden façade," explains Zerle. These insulating elements, too, are already being produced using WEINMANN systems.

No blueprint

While WEINMANN had not been geared toward realizing such large-scale projects up to that point, it was nothing unusual for the parent company. For decades, Dürr has been planning and building paint shops for automotive manufacturers all over the world. Their order value can easily exceed 200 million euros. The Group's subsidiary HOMAG has the knowledge and experience to handle large orders for the furniture industry.

"We said from the outset that this order would be a catalyst for the introduction of new ways of working at WEINMANN."

JOSEF ZERLE,
MANAGING DIRECTOR OF WEINMANN

RESIDENTIAL CONSTRUCTION NEEDS A BREATH OF FRESH AIR

The market for new housing is facing major challenges. Professor Michael Voigtländer, an economist at the German Economic Institute (IW) in Cologne, believes that serial construction is an important approach to solving these issues.

GUEST FEATURE BY
PROFESSOR VOIGTLÄNDER

Supply and demand are currently mismatched in the residential construction sector. While solvency has declined due to higher interest rates, construction costs continue to rise due to material and labor costs as well as increased requirements. In the last three years alone, the costs of new construction in Germany have risen by approximately 40 percent. As a result of this combination, the number of building permits has fallen sharply. The situation in Germany is particularly precarious because construction activity is declining

while the population is growing rapidly. With 1.46 million people, Germany saw record immigration in 2022; in Berlin alone, the population grew by 80,000 people in one year. One reason for the strong influx is the large number of refugees from Ukraine, but the immigration of skilled workers has also picked up again. However, Germany is not the only country facing problems from rising interest rates and higher construction costs; building permits have also plummeted, at least temporarily, in many other European countries and in the US. Ultimately, the challenges are very similar across the industrialized countries.

If interest rates start to fall slightly again as a result of declining inflation rates, this could provide new momentum for construction activity. But this is where the next challenge arises: Skilled labor is in extremely short supply and rising wages are leading to further cost increases. Among the ten occupations in Germany with the greatest shortage of skilled workers, two are in the construction sector: construction electricians and heating installers. In addition, housing construction will have to focus more than ever on sustainability, both in the construction of properties and in their management. The building sector accounts for around 36 percent of carbon dioxide emissions through hot water processing and air conditioning alone.

“Serial construction can be a decisive approach.”

PROFESSOR MICHAEL VOIGTLÄNDER

In view of these challenges, innovative solutions are required that significantly increase the productivity of residential construction. Serial construction can be a decisive approach here. In this method, residential buildings are no longer just erected on construction sites, but are partially prefabricated in factories. This means housing can be built faster, at lower cost, and with fewer workers.



PROF. MICHAEL VOIGTLÄNDER
is a real estate expert at the German Economic Institute (IW).

“We were faced with serious supply bottlenecks. We countered this with a systematic approach and the consistent dedication of everyone involved.”

JÜRGEN DÖRFELDT,
SENIOR EXECUTIVE PROJECT
DIRECTOR AT DÜRR



Nokera's show house illustrates what modern construction with timber can look like.

The Dürr Group then had to transfer this knowledge to timber construction, because there was no blueprint for the order from Nokera. In the first three months, the Group's own consulting companies SCHULER and Dürr Consulting were instructed with the initial planning to determine what a gigafactory should look like and how production should take place. “We also had to clarify how the individual stations could be automated and interlinked,” says Jürgen Dörfeldt, who managed the overall project. He has already handled many major orders in Dürr's paint systems business.

At WEINMANN, the experts considered how they could combine their machines and systems for the high outputs of large production lines. Meanwhile, HOMAG took care of procurement. Not an easy task. A project of this size requires huge quantities of steel, cables, robots, control cabinets, and much more to be in the right place at the right time.

Fighting supply bottlenecks

This was only possible with meticulous planning and a lot of experience. Especially in a difficult environment, affected by the coronavirus pandemic and the war in Ukraine. “We had to deal with severe supply bottlenecks, which we countered with a systematic approach, regular consultations, and the consistent commitment of everyone involved,” says Jürgen Dörfeldt. The clear and stringent project management was fundamental to the success. “That is why it always worked,” says the project manager.

Another challenge was WEINMANN's limited production capacity. In order to produce that many machines in the specified time, several Group locations had to help out. The HOMAG plants in Schopfloch, Lichtenberg (Saxony), and Środa Wielkopolska (Poland) stepped in, as did Dürr Poland in Radom. The automation specialist Teamtechnik was also involved with technical personnel and its plant near Stuttgart.

In July 2022, assembly of the machines and systems began. Here, too, the scale of this extraordinary project was evident. The processes on

the construction site had to be organized and deadlines had to be strictly adhered to. This also applied to the agreements with the customer and the suppliers.

At the end of 2023, the factory went into operation. Initially on a trial basis, because before series production begins and transitions into the ramp-up phase, the employees are trained by the WEINMANN Academy to deliver outstanding performance. But you can already admire what the result will look like. Nokera has built a four-story show house right next door. With an unobstructed view of the gigafactory.

95%

OF NOKERA'S
BUILDING MATERIALS
can be recycled.

IN JUST

3 months

Nokera can erect residential
buildings thanks to serial
construction.

Source: Nokera

BETTER TOGETHER



A CLEAN OPERATION

Electric cars significantly improve the environmental impact of private transportation — provided that the battery is charged with green electricity. Sustainability is also the order of the day in vehicle production. The automotive industry is increasingly investing in energy-efficient and low-emission plants. The focus is primarily on the painting process, as this is where significant energy savings can be achieved. Dürr is developing the technology for this. Even completely CO₂-free paint shops are already an option today.

ENTREPRENEUR, ROLE MODEL, HUMAN BEING



Heinz Dürr was one of the most prominent entrepreneurial personalities in the Federal Republic of Germany. A “born optimist,” as the Stuttgarter Zeitung newspaper called him, he became best known as the head of AEG and Deutsche Bahn. But above all, his heart beat for his own company. Heinz Dürr, who died in November 2023 at the age of 90, was many things to the people of the Dürr Group: supporter, visionary, stabilizing force, and an approachable figure they could identify with.

When the news that Heinz Dürr had passed away was posted online, his company paused. After a few minutes, the number of clicks on the intranet skyrocketed. Thousands of employees thought of “HD” and his family, and some posted online tributes. One colleague who wrote the following received many likes: “Heinz Dürr’s presence alone gave me the feeling that there was someone that had everything under control.” This sentence sums up the security and confidence that Heinz Dürr instilled in “his people”. And it illustrates how important it is to have a strong personality, one that conveys to the workforce the feeling that nothing can go wrong under their leadership.

TEXT: MATHIAS CHRISTEN — PHOTOS: ARCHIVE

Trust instead of mistrust

Heinz Dürr was driven by an insatiable curiosity. He was particularly interested to learn what young people in the Group thought. In a discussion with members of “Generation Y” a few years ago, he said: “People should be judged by what they can do, not by what they can’t do.” This is an encouraging and humane statement. It communicates to the employees: The management of my company counts on me for who I am and what I can do. I am not met with mistrust, but with trust. Such an attitude provides support, and that is the best basis for performance.

Looking back at Heinz Dürr’s first decades in the company, i.e. the 1950s, 60s, and 70s, something wonderful becomes apparent: Heinz Dürr has enabled many people around him to develop in ways they could never have imagined. His companions did not come from Silicon Valley, London’s financial district, or elite universities. Instead, they were down-to-earth, often Swabian apprentices, workers, technicians, clerks, secretaries, and engineers. These people grew up at Dürr. Even though they had never traveled far before, they managed projects in Brazil, built paint shops in the US, and prepared balance sheets for a company that calculated in reals, francs, and dollars. In the days of the economic miracle, Heinz Dürr took them with him on his entrepreneurial journey. The result was a type of manager and employee that still characterizes the Dürr Group today: hard-working, upright, modest, but also cosmopolitan and thinking big.

Social organization

Heinz Dürr’s credo was “The company is a social organization.” What he meant was: It’s about manufacturing products that society needs and treating the people in the company decently. As a family entrepreneur, he was there for his employees in the traditional sense, but otherwise he focused on innovation. Not only in terms of technology, but also culturally and socially. Together with his wife, Heide, he brought theater groups to the factory in the

1960s, initiated discussions, founded a factory library and an employee newspaper. The Dürr Big Band, in which he enjoyed jamming along on the piano, was particularly close to his heart. Heinz Dürr also listened to the works council. The term “red Dürr” therefore circulated among employers, but for the people in the company it was perfectly normal. Heinz Dürr was not a gray eminence, but an approachable entrepreneur. He did not rely on uniformity and yes-men, but on individuals with their own minds and work ethic.

“Carry on then”

In later years, his phone calls became legendary. His secretary, Mrs. Doyl-Berger, would call from his office on Berlin’s Gendarmenmarkt: “Mr. Dürr would like to talk to you, I’ll put you through.” And you were already in the middle of a conversation. The phone rang for all kinds of people in the company from whom Heinz Dürr wanted to know something. His calls were often spontaneous, hierarchies were

not that important. At first, it was also hard for CEO Dr. Jochen Weyrauch to imagine never receiving such a call again. He remembers his last phone call with Heinz Dürr: “It was about Ingecal, our most recent acquisition.

Mr. Dürr wanted to know how their calendaring technology worked. I explained it to him and he said: “All right, carry on then.”

When Heinz Dürr said this, no one could have imagined that the company would have to carry on without him shortly afterwards. His death has left a gap. “HD” was with the company longer than anyone else, he shaped it and embodied it. Dürr without Heinz Dürr? For many, that was unsettling. However, he himself would have been averse to prolonged lamentation. Heinz Dürr always had to keep going, and setbacks were no obstacle. In his obituary, his family quoted the philosopher Albert Camus: “One must imagine Sisyphus happy.” Always start again, believe in yourself, seek happiness in the act of doing, and remain confident: This is Heinz Dürr’s legacy to his company.

“People should be judged by what they can do, not by what they can’t do.”

“I have always been a very active person who likes to get involved and turn visions into reality.”

“The future is uncertain, but exciting.”

“Every company has its own corporate culture, perhaps even a soul.”

“Folks, stay curious!”



FAMILY REMAINS ANCHOR SHAREHOLDER

Heinz Dürr drew a lot of strength from his family. His wife Heide and daughters Alexandra, Karoline and Nicole have always stood by him in support of the Dürr Group and will continue to do so in the future. The Dürr family remains the anchor shareholder of Dürr AG. Alexandra Dürr has been a member of the Supervisory Board for many years.

IN A NUTSHELL

Opening doors *with the Mouse*

The Group's subsidiary Teamtechnik supported the orange-colored iconic character from the educational children's TV show "Sendung mit der Maus" on the nationwide "Opening doors with the Mouse" action day. In October, the doors were opened in Freiberg for guests between the ages of seven and fourteen with a thirst for knowledge. The focus of the event was on electromobility. A tour of the plant revealed the secrets behind the assembly and testing facilities for drives, batteries, and solar modules. Under expert guidance, the children were allowed to assemble small solar-powered vehicles. They were then chauffeured around the factory premises in electric cars to experience the technology at first hand.



Something sweet *from the Dürr Group*

When it's warm outside, the Group sites in Lemgo, Calw-Holzbronn, and Püttlingen are humming and buzzing with activity. Hundreds of thousands of yellow-striped workers are out collecting nectar and pollen from flowers, from which delicious honey is made — always under the expert care of beekeepers. The idea of housing bee colonies came from the workforce. The sweet natural product is regularly distributed internally. However, some jars are also sold at local Christmas markets — thus financing the sustainable honey projects.



Ready *for growth*

Schenck's Indian site in Noida has grown: Just under 200 meters from the existing plant, a new building complex combines the production facilities for tire and wheel assembly machines with the office space for the IT department. At the opening ceremony in March 2023, celebratory words alternated with lights, colors, singing, and dancing. "We see enormous growth potential in India. The country will play an even greater role for us in the future than it already does today," says CFO Dietmar Heinrich.

Campaign *for diversity*

Being different together: This is the motto of the Dürr Group's new diversity initiative. Embracing the diversity of people makes a company more vibrant. The first diversity event took place in Bietigheim-Bissingen on the occasion of the German Diversity Day. In discussion groups, employees came to the conclusion that they could learn a lot from each other. This can be achieved above all by recognizing and appreciating differences. In short, we are "better together."





*“The three realms of politics,
business, and culture
must intersect to form
a common ground
for society to function.”*

— HEINZ DÜRR (1933–2023)