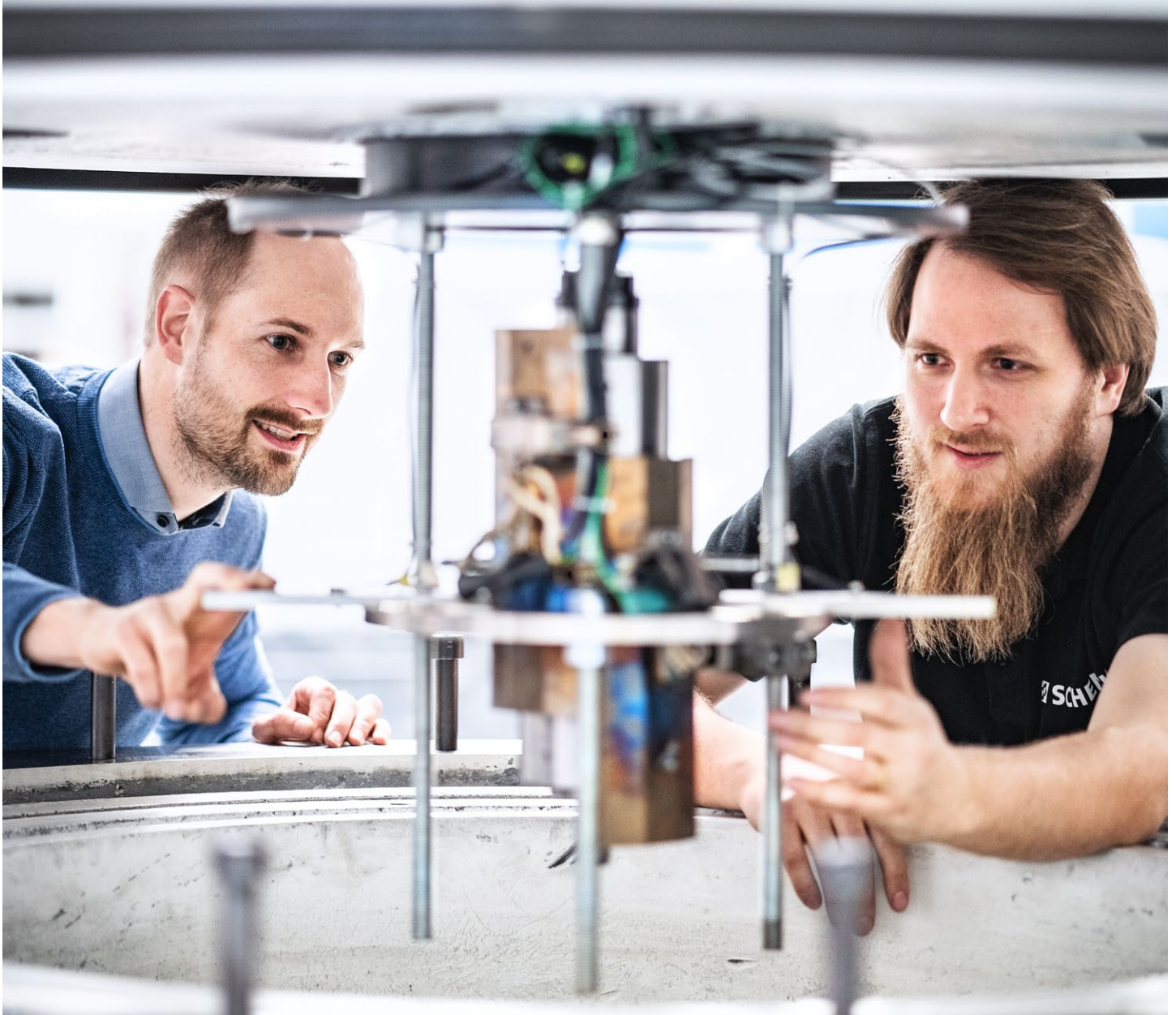


ECO

THE DÜRR GROUP MAGAZINE



DRIVING CHANGE

Stress test
Page 8

Digital toolbox
Page 18

Sharp edge
Page 25

ME

WHAT WOULD
BE BETTER ?

on

Greater motivation
among employees

employee satisfaction

Quality of work

Each employee
feels appreciated

- lighter workload
for manager
- fewer problems
- employee solves

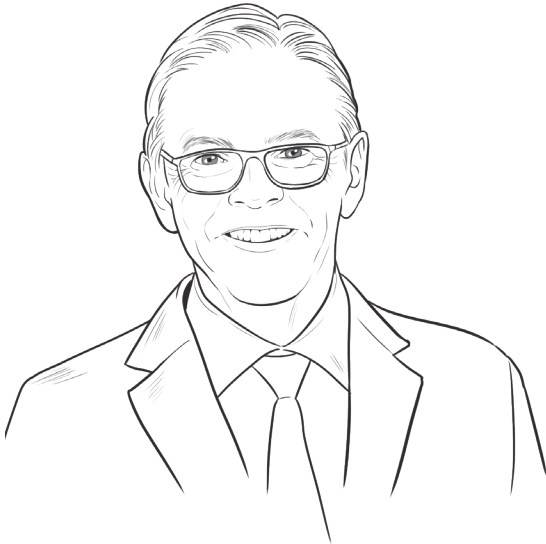
CONTINUOUS
IMPROVEMENT

structured
career planning
→ safety for
employees /

IN DIALOG

How would you like to be managed? What do you expect from your employer? These are the questions we ask our employees – and we pay close attention to what they have to say. After all, “Driving Change” means being an attractive employer now and in the future. You can find more information about this on page 34.

EDITORIAL



“Smart production technology has top priority in our development work.”

Dear Readers,

Being a global company, we monitor developments around the world very closely. And despite a great deal of uncertainty, we at Dürr have reason to be optimistic about the future.

This is partly due to the fact that we gained an early foothold in the world's growth regions, such as China. This country continues to offer huge opportunities for Western companies. The consumer spending of the growing middle class is driving the industry's investment needs. This in turn benefits us as a provider of attractive cutting-edge technology.

Strategic acquisitions are enabling us to give our company a broader base that secures our future, and to position ourselves in niche markets with promising growth prospects. One example is the integration of the Megtec/Universal Group, which has helped us significantly strengthen our position as a market leader in environmental technology.

Sustainability aspects are becoming increasingly important – something we are noticing particularly in our automotive business. Resource-friendly production technology is playing an ever greater role when projects are awarded.

To secure our position as a technology leader in mechanical and plant engineering, we are resolutely driving digitalization. Our smart applications help to make production more economical and sustainable – for carmakers and local carpenters alike. All modesty aside: I see our companies as pioneers in developing digital solutions for the mechanical and plant engineering industry – and I see this reflected time and again in many discussions with our customers and other mechanical plant engineering firms. But we won't rest on our laurels. Smart production technology has top priority in our development work.

We can only overcome the challenges that lie ahead by deploying the most talented people. To remain an attractive employer for them, we will not shy away from taking a critical look in the mirror. Aside from regular worldwide employee surveys, we have also launched initiatives such as the Young Generation Dialogue. We seek an open dialog with our employees in order to learn how young people, in particular, want to be led.

On the following pages you can find out how we are shaping this multifaceted change.

I hope you enjoy the magazine!

Ralf W. Dieter
CEO

CONTENT

Highlights 2019

Page 6

Stress test

OEMs test their electric motors in speed test systems at Schenck RoTec.

Page 8

Smart painting

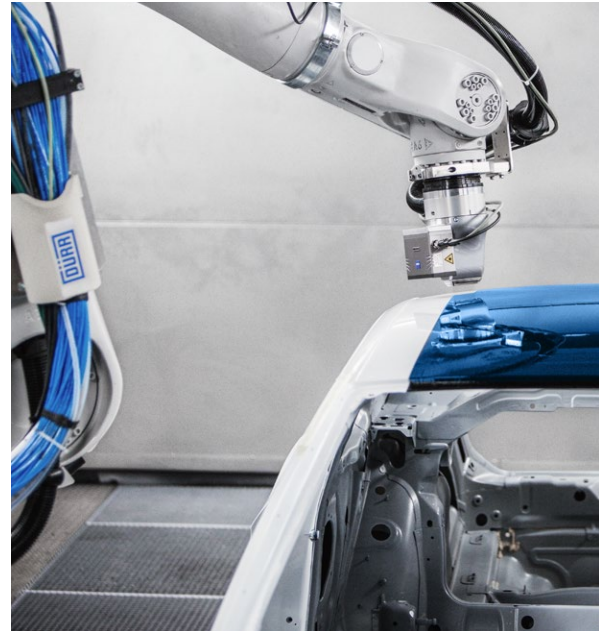
Young experts such as Simon Alt bring artificial intelligence into the paint shop.

Page 14

Digital toolbox

Thanks to smart helpers, the digital transformation also reaches small carpentry shops.

Page 18



Sustainability has become a huge topic

An interview with Dr. Jochen Weyrauch, Deputy CEO of Dürr AG

Page 22

With joint forces

Find out how our customers in exhaust-air purification technology benefit from the Megtec/Universal acquisition.

Page 23

Sharp edge

Painting without overspray thanks to EcoPaintJet

Page 25



South Korea meets Morocco

An interview with Mi Hyang Shin about her experience as a site manager in Morocco

Page 32

In dialog

What should the working environment of the future look like?

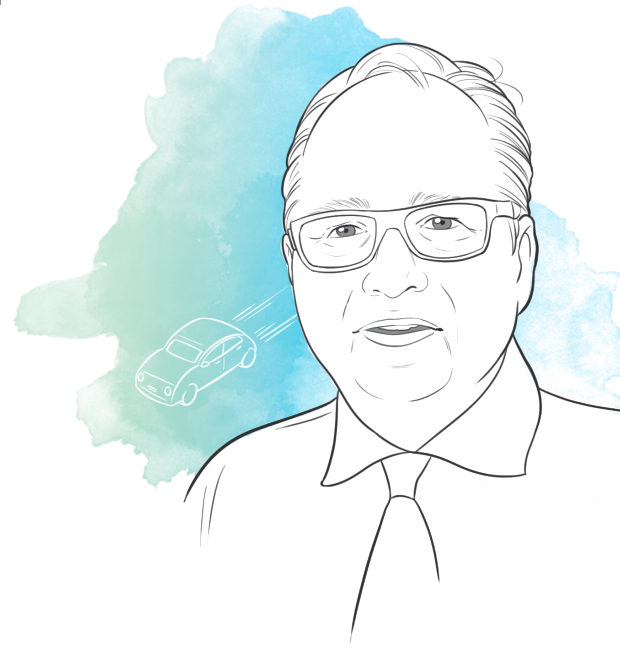
Page 34

Dürr at a glance

Page 38

Credits

Page 39

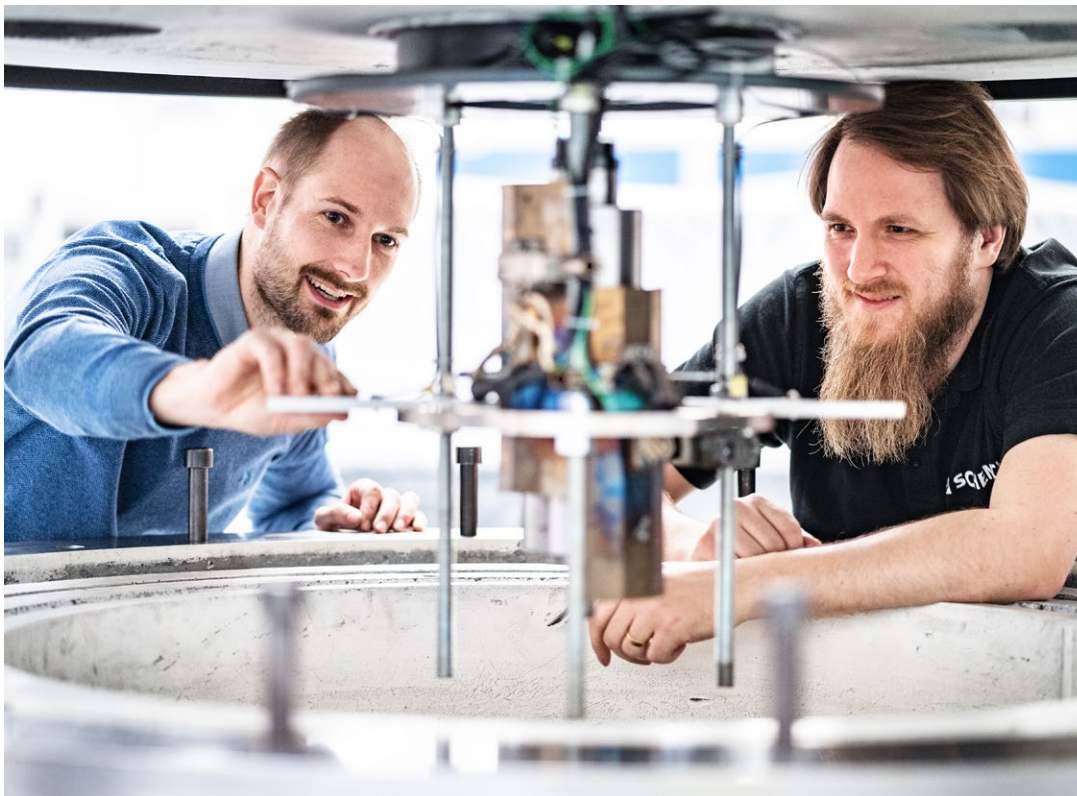


23

With joint forces

8

Stress test



HIGHLIGHTS

20

JANUARY

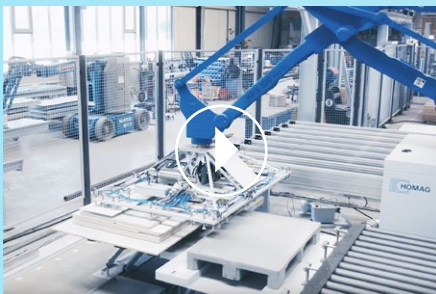
Smart paint shops

Through software innovations for big data analysis and advanced analytics, we offer our customers new opportunities for maintenance, quality assurance and process analysis in their paint shops.

MARCH

And the Winner is ...

Five employee teams are presented with the Heinz Dürr Innovation Award, e.g. for the virtual commissioning of woodworking machines using a so-called 'digital twin'.



Please find more information here:
www.durr-group.com/en/and-the-winner-is/



EcoPaintJet makes it possible: Razor-sharp paint lines applied without overspray.

APRIL

Efficiency Summit at Dürr AG

At the 7th Efficiency Summit of the Institute for Energy Efficiency in Production (University of Stuttgart), we welcome renowned representatives from politics, business and science to our corporate Bietigheim-Bissingen headquarters.

MAY

Quantum leap in paint application

The EcoPaintJet robot system makes it possible for the first time to paint car bodies with maximum precision and without any overspray. The application of contrasting colors and decorative stripes thus becomes infinitely more efficient and eco-friendly.

Open House

The 11th Dürr innovation show at the Bietigheim headquarters showcases our DXQ software solutions for smart production.

ADAMOS Digital Day in Leonberg

Mastering digital transformation together: In the presence of Baden-Württemberg's Interior Minister, Thomas Strobl, we team up with ADAMOS and our partner DMG Mori to present applications on the ADAMOS IIoT platform to over 300 guests from the mechanical engineering industry.

Award for artificial intelligence

RWTH Aachen University honors Dürr as one of five Successful Practice Companies in Germany for its use of artificial intelligence in research and development.

19



Digitalization for any carpenter: One of the highlights at the Ligna trade fair.

JUNE

Sustainability-linked **Schuldschein** loan

Cost-effective, innovative and sustainable: We issue the world's first sustainability-linked Schuldschein loan worth € 200 million.

Positive response

Making production more efficient and flexible: The HOMAG Group has developed quick-to-deploy solutions for entry into digital production, specially designed for woodworking shops and SMEs. LIGNA, the industry's leading trade fair, proves that customers are impressed.

AUGUST

Sustainable refinancing

€ 750 million, with an interest rate linked to sustainability factors, among others: An innovative syndicated loan secures us favorable and sustainable financing conditions.

SEPTEMBER

Digital Schenck innovations with new brand

The highlight at the EMO trade fair: Intelligent software solutions for more productivity in balancing – this is what the new Schenck ONE digital brand represents.

OCTOBER

Employee survey sees record participation

A participation rate of 82% and a positive response from employees: The latest employee survey paints another good picture of the Dürr Group as an employer.

NOVEMBER

High marks

In the 'Best companies for vocational training' ranking of business magazine Capital, Dürr, Schenck and HOMAG reach top positions in Germany.

DECEMBER

3 in one sweep

Carmaker BMW commissions Dürr with as many as three paint shop projects. The paints shops will be built in China and Hungary.



At the ADAMOS Digital Day, the Interior Minister of Baden-Württemberg, Thomas Strobl, learned about the latest apps for digital production.

Stress test

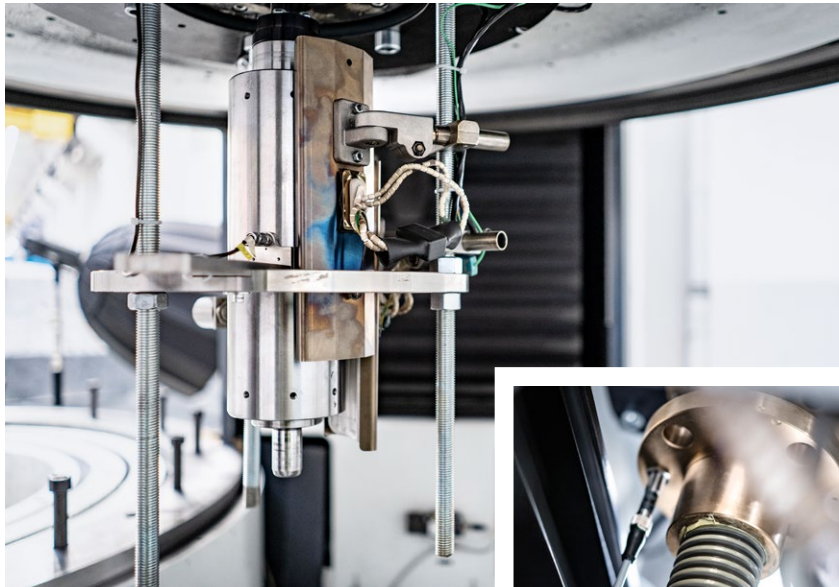
STRESS



Stress test

The number of electric cars is rapidly growing. Manufacturers are constantly developing new electric motors. The heart of such motors is a rotor that rotates up to 20,000 times per minute. Experts at the Dürr subsidiary Schenck RoTec test this essential component in their spin test systems – sometimes until it flies apart.

TEXT: HEIMO FISCHER — PHOTOS: PETER JÜLICH



FFEST TEST



Nothing gets him in a spin: Even at 20,000 revolutions, spin test expert Andreas Buschbeck stays calm.



he three-meter-high colossus is housed in steel, its heavy hood secured by 14 bolts as thick as your thumb. One technician is looking at his monitor and following the progression of the test. The atmosphere around the Schenck spin test system is one of concentration and silence. The humming of a motor is all that can be heard. Yet nothing hints at the fact that, inside the closed container, forces of several tons are at work, subjecting the component to extreme stress.

For the developers of rotors, turbines or engines, tests in spin test systems are often indispensable. "With their help, the resilience of materials can be optimally tested," says Andreas Buschbeck. He manages the spinning service of Schenck RoTec, a small but quickly growing unit of the Dürr Group.

The long-established enterprise from Darmstadt is known for its expertise in balancing technology. The sale of spin test systems has also been part of the business for quite some time. "Since 2010, we have also been offering our customers spin testing as a service," says Buschbeck.

What started out as a niche market alongside the sale of spin test systems is gaining more and more traction. In the past four years alone, sales in this new business line have quadrupled.

Forces akin to a swing carousel

The reason for this speedy development is the boom in electromobility. Automobile manufacturers are increasingly developing the motors required. At their heart is a rotor which, with its magnetic fields of electric energy, generates kinetic energy. "When cars are in motion, the rotors rotate up to 20,000 times per minute," remarks Buschbeck. Enormous centrifugal forces impact the metal, similar to a swing carousel, where the chairs are pulled outward when the ride spins quickly. The spin test system enables testing of how well a component can withstand such massive forces.

Can you calculate how strong those forces are? "Sure," answers Buschbeck, who has a degree in physics, and dictates the correct formula: " $F = U \cdot \Omega^2$." Could we have that in more concrete

THE ROTORS OF
ELECTRIC CARS ROTATE UP TO

20,000

TIMES PER MINUTE

Stress test

“With the help of the spin test systems, the resilience of materials can be optimally tested.”

ANDREAS BUSCHBECK,
HEAD OF TECHNICAL CONSULTING
SCHENCK ROTEC

terms? Andreas Buschbeck laughs and grabs paper and pencil. A few seconds later, he reads out the result: “For a 20-gram magnet in the rotor and at 20,000 revolutions per minute, that’s more than half a ton.” That is an awful lot, considering more than a dozen magnets are installed in a single rotor. These incredible forces pull on the material and deform it. And why are the experts particularly looking at that part of the rotor containing the magnet? “Because that’s where the structure of the material is interrupted and is thus more vulnerable,” explains Buschbeck.

The tiny bulges that develop at high revolutions cannot be detected by the naked eye. And yet they can be decisive when it comes to the stability of the material. Furthermore, it is possible that even the slightest shifting of individual components can lead to unbalance which will cause the motor to vibrate. The vibration is loud and leads to even faster wear. That is why changes are precisely measured in the spin test system using digital technology. Those results show whether the rotor is constructed such that it meets desired specifications, says Buschbeck.

If a component deforms to a greater degree than expected in the spin test system, the rotor developers have to go back to the drawing board.

After his studies, 32 years ago, Andreas Buschbeck came to what is now the Dürr subsidiary and initially developed balancing machines. Subsequently, he advanced the company’s spinning technology as an internal consultant. However, not all customers find it worthwhile to buy their own spin test systems. When more and more customers asked for advice on spinning issues, the experts started developing a new business line. Today, in the Schenck Technological and Industrial Park, four spin test systems are employed on a daily basis to test components and material samples. It is especially important for customers that Schenck experts can precisely analyze the digital data collected. “This consulting service is an integral part of our range,” states Buschbeck.

Traces of the endurance test

Some tests in the spin test system take several weeks – for instance, if they have to simulate continuous operation in an electric car. In such

Ultra-concentrated so everything goes smoothly: At 20,000 revolutions, 20 grams turn into a force of half a ton.





Stress test



Schenck experts assemble a spin test system.

cases, the experts at Schenck perform several thousand test cycles at various speeds. If a customer wishes, Schenck also offers the ultimate test: The object is accelerated until it flies apart. This sometimes requires a speed of 200,000 revolutions per minute. The traces of such endurance tests can be seen on the steel inner walls of the spin test systems: They are speckled with craters.

Spin test systems used to be merely employed to determine the load limit of a material. It was only Buschbeck and his team who further developed the systems by adding digital metrology and modern software. In doing so, they have turned spin test systems into high-tech products. Today, with the aid of optical sensors, laser beams and electric fields, changes to materials can be identified in every phase of testing.

Currently, the developers are working on another innovation. They want to photograph the spinning parts in their spin test systems using unusually short flashes. The results would then not only consist of measurements, but also photos, which would facilitate interpretation.

Time and again, customers also approach the spin test experts with special wishes – such as manufacturers of turbine rotors. They drop off parts of a material with Buschbeck when they need special testing. Schenck RoTec even built



Deep craters on the steel inner walls testify to the extreme forces exerted during testing. Some components are rotated at speeds of up to 200,000 times per minute – until they can no longer withstand the forces and shatter.

a customized spin test system especially for one customer who wanted the pump gear of a rocket tested.

In the past year, the experts from Darmstadt were involved in a veritable project of the future. Students at the Swiss Federal Institute of Technology (ETH) in Zurich had constructed a vehicle with which they wanted to participate in a contest initiated by Tesla founder Elon Musk. The theme of the competition was a new concept for mobility – the hyperloop. It involves transport pods being propelled through a vacuum tube at speeds exceeding 1,000 kilometers per hour. Before the competition, Schenck tested the rotating parts of the vehicle in the spin test system – thus contributing to the success of the team: The student team was able to travel to California for the finals, where it took second place.

200,000

REVOLUTIONS PER MINUTE:
ENDURANCE TEST PERFORMED
WITH EXTREME LOADS

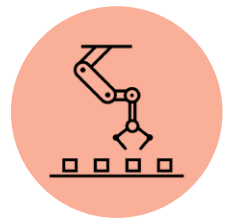
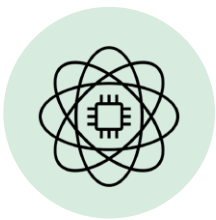


More information
available here:
[www.durr-group.com/
stress-test/](http://www.durr-group.com/stress-test/)

SMART PAINTING

Dürr is bringing artificial intelligence to the painting lines of OEMs. Right at the forefront are young experts like Simon Alt.

TEXT: HEIMO FISCHER — PHOTOS: HELMUT PANGERL





“Paint shops are so complex that they provide an ideal platform for the use of artificial intelligence.”

DR. SIMON ALT

3,500

THE NUMBER OF DATA POINTS RECORDED FOR EACH CAR BODY

An important principle in the Digital Factory: Sharing knowledge.



Bright colors, stylish design. In the meeting room, six people dressed in jeans, shirts and t-shirts gather around in a circle – seven others dial in via the Internet. The programmers, data experts and painting specialists provide an update on where they are with their work. Short questions, quick answers. After 15 minutes, the men and women once again disappear behind their screens. Fingers fly across keyboards, keys clatter, eyes scan over graphics and rows of numbers. The soccer table and comfortable chairs in the colorfully furnished rooms on the Dürr campus in Bietigheim-Bissingen look deserted.

Simon Alt holds a PhD in control engineering. He and his team work in the Digital Factory, an important future-oriented field at Dürr, consisting of around 100 employees. They develop applications to make OEMs’ painting lines more efficient – including with the help of artificial intelligence. Their programs make quick work of scrutinizing entire manufacturing systems. They scan ongoing production processes, analyze them and identify systematic quality defects.

Alt joined Dürr three years ago. Today, he manages a team of six people. He already learned about artificial intelligence at university, where he studied engineering cybernetics, a mixture of mathematics, information technology and engineering. This field of study deals with the analysis and targeted control of technical systems – including their modeling and simulation. One day, these systems are likely to solve problems like humans can today. For Alt this is a fascinating thought. Dürr products offer him the right environment for this. “Paint shops are so complex that they provide an ideal platform for the use of artificial intelligence.” This topic has high priority at Dürr: “The use of artificial intelligence in the painting process currently occupies several teams, with whom we are in close consultation.”



100 GB

THE AMOUNT OF DATA COLLECTED PER DAY IN A PAINT SHOP

“The use of artificial intelligence in the painting process currently occupies several teams.”

DR. SIMON ALT

Structured work instead of science fiction: Dr. Simon Alt and his team are working on digital innovations for the paint shop.



The software experts quickly realize whether or not an idea works in practice, since they have the support of experienced painting process specialists. “This is where we have an advantage over many other companies that offer software for the painting industry”, says Alt.

Structured work instead of science fiction

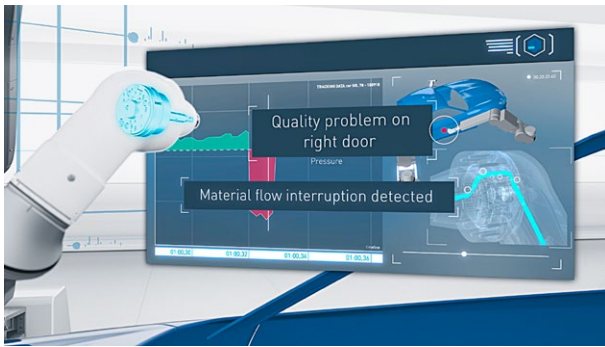
When Alt talks about artificial intelligence, it doesn’t sound like science fiction but rather like structured work. “We can use artificial intelligence to analyze production data and gain important insights from it.” Does a valve in a dip tank need to be serviced? Why is the temperature in the oven not right? Is there a link between paint color and error rate? Finding answers to questions like these currently costs OEMs a great deal of time and money, as they must check each machine and each system individually. With the help of intelligent algorithms, it will be possible to answer these questions ever faster, better and more easily.

Big data plays a crucial role in finding solutions. Alt points to a chart. “For us, data primarily includes everything that can be measured in a plant.” This could be temperature, pressure or

the quantity of liquids. Hundreds of probes and sensors already measure this kind of data at all important points in a Dürr painting line. “This information is the raw material for artificial intelligence”, says Alt. It is stored in a database and analyzed automatically.

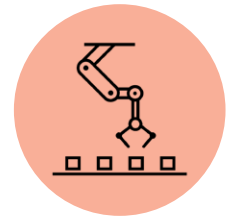
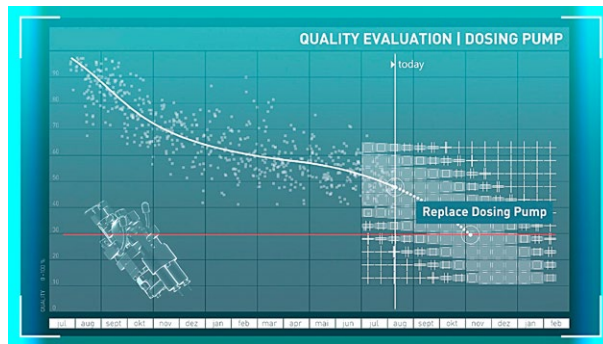
The smart algorithms rely on a wealth of experience. They compare current with past data. They identify any discrepancies and check whether these kinds of patterns have led to errors before. One example would be the spray pressure of a robot dropping for a few milliseconds. In this case, the system would know that the most likely cause is a defective valve. A quick check of the painting results would prevent a potential quality issue from going unnoticed until final inspection – by which point many vehicles would already have been affected. “Plus, the intelligent search for causes allows for predictions to be made on how much longer a component is likely to last”, says Alt. Costly failures in ongoing production could thus be prevented, for example by replacing parts during idle periods. Such an analytics function is currently being presented to customers in the form of the DXQequipment.analytics software.

Smart painting



Pressure loss in the painting process: The software knows immediately what the problem is.

How much longer will the pump last? Artificial intelligence can predict the remaining lifetime of components.



4.2 sec

THE TIME IT TAKES
THE SOFTWARE TO IDENTIFY
ERROR PATTERNS
FROM 600,000 DATA SETS

Dürr's DXQplant.analytics software monitors not only individual machines but the entire paint shop. The algorithms record if there is an increase in, say, the number of defects on car bodies painted blue every Monday. They analyze millions of data and search for the cause. The source of error can be narrowed down. Unusual measurements in the paint mixing room might indicate that the same error always occurs during routine cleaning at the weekend. Employees responsible for optimization in car factories normally spend days searching for such causes, which is hugely time-consuming. Going forward, this will be much quicker, thanks to DXQplant.analytics.

Can machines act like humans?

Up to now, software has analyzed information and presented recommendations for action. But the responsibility for implementing these recommendations still chiefly lies with humans. What Alt and his colleagues are working on is for

Dürr plants to self-regulate one day. "When it comes to these questions, artificial intelligence is still in its infancy", says Alt. His team is conducting research using the method of reinforcement learning, among others. In this method, software is programmed to feel rewarded whenever it makes any progress. Just like a dog that gets a treat for good behavior.

"It is even conceivable for the entire automotive factory to be included in a self-regulating system", says Alt. In this case, production processes would be automatically modified to ensure, for example, that a problematic machine causes minimum hindrance to the production process. It might even be possible to divert supply chains.

However, Simon Alt and his team still have a lot to do before this becomes reality. Until then, they will no doubt find some time for the odd game of table soccer.



More information
available here:
[www.durr-group.com/
smart-painting/](http://www.durr-group.com/smart-painting/)



DIGITAL TOOLBOX

TEXT: HEIMO FISCHER — PHOTOS AND ILLUSTRATION: HOMAG GROUP AG, LUISA JUST

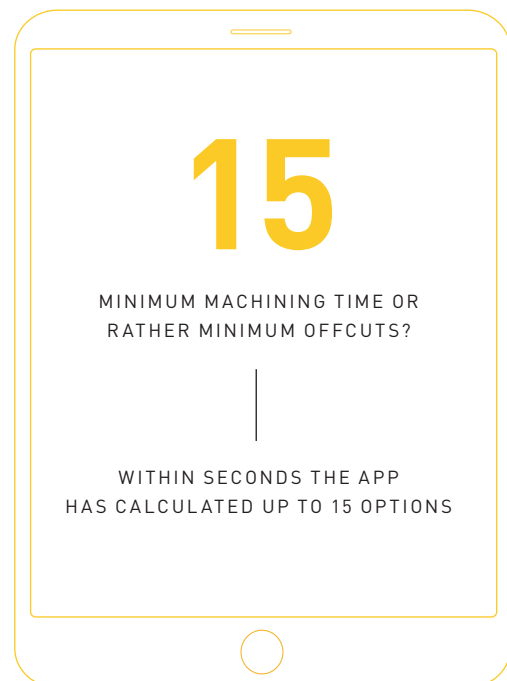
A good carpenter does not need to be an IT expert. With specially tailored smart helpers, the HOMAG Group also brings digital transformation to small workshops.

Good organization is the key to successful work in the carpentry workshop. Boards, trim panels and fittings need to be in the right place so they are always close to hand. Machining must also be organized efficiently. HOMAG's digital assistants support carpenters in this. "The apps are specially tailored to the needs of small workshops", says Hendrik Albers, Head of Digital Product Innovation at the HOMAG Digital Factory. It is in this department that HOMAG's digital solutions are conceived – whether for customers with one, 1,000 or 10,000 staff. The company, part of the Dürr Group, is the world's largest manufacturer of machines and equipment for the woodworking industry, where digitalization is already well advanced. This expertise also benefits smaller woodworking shops.

While software for large industrial companies involves complex networking and highly automated processes, the primary focus for carpenters is on the uncomplicated use of digital helpers. This is why the new HOMAG apps are easy to operate and require no expensive IT system. In fact, woodworking shops can decide for every single workstation in their workshop whether to retrofit it with a digital module. All that is initially required in the workshop is the Internet plus a tablet or PC.

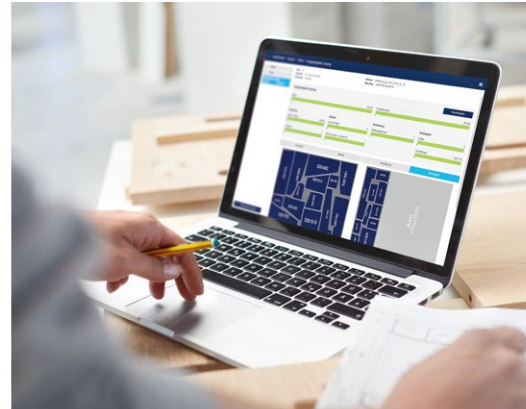
Show me my cabinet

Selling is made easier for carpenters with the cabinetCreator. It can be used during customer meetings to bring together the material, colors and fittings of a cabinet on the screen. It takes just a few clicks to create a virtual piece of furniture, just as the customer wants it. In addition, the carpenter can see parts lists, CNC data and everything he needs for the subsequent production. The data can be transferred to the productionManager app. This digital job folder replaces the working documents in the workshop and always knows the updated order status. The data stored there can be used in the subsequent work stages.





Searching is now a thing of the past: LEDs on the rack indicate in which shelf space the relevant edge banding can be found.



User-friendly, low investment, great benefit: That's the basic idea behind the digital HOMAG assistants.

No more human calculation errors when sawing

Owners of small workshops can also digitally optimize the cutting of panels, something that is already the norm in larger industrial companies. After all, up to a quarter of the material is wasted during sawing or milling. Any human calculation error can cost the business money. And let's not forget that less material also means less impact on the environment. The intelliDivide software works out the best way to cut the material and gives the machine operator a choice: minimum machining time or rather minimum offcuts? Within seconds, the app has calculated up to 15 cutting options. "It's so fast because the results are calculated in the cloud with high processing power", explains Albers. In addition, a printer spits out labels with barcodes for all parts that have been cut so they can be clearly identified. In this way each item is given the information it needs to be processed by the next machine.

Digital edge management instead of pen and paper

To seal the unsightly panel edges, some workshops store a large selection of edge banding in many different colors and materials. If one type is missing, the order cannot be completed. "Many workshops don't have a clear overview of their stock or, at best, they might be working with stock lists", says HOMAG expert Albers.

Thanks to the materialAssist Edge application, this is now a thing of the past. The app manages the edge banding stored in a special rack. The carpenter simply selects all edges to be processed using his tablet. An LED light shows him in which shelf space the relevant edge banding can be found. He can also see whether stocks are sufficient.

It takes time to sort all parts and prepare them for assembly or packaging. This is where the

productionAssist Sorting comes in. The carpenter scans the label using a glove that includes a barcode reader. In the blink of an eye, the software suggests the optimal storage location in a special sorting rack and guides the carpenter to the right shelf space using an LED light. Once all the parts for a piece of furniture have been sorted, the app gives a signal. The assembly or packaging of the finished piece of furniture can begin.

Further information is required for the assembly. What parts and fittings are needed? HOMAG's assembly assistant provides the answer. Within seconds, it shows drawings and the corresponding components, among other things. It lists all the furniture ready to be assembled and indicates the storage location of the parts. That way, assembly errors hardly ever occur.

Carpenters must have a grasp not only of the furniture and the material but also of the tools. Which tool to use depends on the material to be processed. "Plexiglas calls for a different saw blade than chipboard", says Hendrik Albers. HOMAG's toolManager knows which

tool is right for the job and whether it is available, and shows e.g. how many meters a specific saw blade has already cut. It also signals when parts need to be replaced. As soon as the carpenter scans the QR code on the saw blade, the machine selects the necessary settings, such as the right speed.

Something for everybody

The wide range of user-friendly apps has the advantage that every business can choose its own rate of digitalization. The experts from the HOMAG Digital Factory are already working on the next digital helpers. In many cases, the workstations in a workshop are upgradeable. "The materialAssist Edge, for example, assists in the management of edge banding and is therefore even independent of the machine that is used", says Albers. If the carpenter uses HOMAG machines, the apps offer further benefits, such as direct data transfer to the machine or feedback to the digital assistant. Over time, individual digital modules will thus evolve into a fully networked workshop where people, machines and digital helpers communicate with each other. And where it is always tidy.



More information available here: www.durr-group.com/digital-toolbox/

"Now we don't suddenly run out of edgebanding anymore."

BENJAMIN LÖW,
LÖW BREIDENBACH MÖBELBAU



The engineer and master carpenter discovered materialAssist Edge at a trade fair. He especially appreciates the fact that the digital helper is so user-friendly.





“SUSTAINABILITY HAS BECOME A HUGE TOPIC”

The responsible use of resources is one of the big issues of our time. The Dürr Group helps customers to reduce emissions, and benefits from this itself. An interview with Dr. Jochen Weyrauch, Deputy CEO of Dürr AG and responsible for the Corporate Sustainability department.

PHOTO: THOMAS DASHUBER

Dr. Weyrauch, how does Dürr help its customers to achieve environmentally friendly production?

With our equipment and machines, customers will, among other things, save materials, consume less energy or manage with less space. In this way, our solutions are in themselves a contribution to sustainable management. Resource efficiency has been one of our criteria in product development for a long time and continues to gain in importance.

Has the importance of sustainability changed for your customers?

Yes, absolutely. This has become a big issue, especially in the automotive industry. Daimler, VW and BMW, like many other manufacturers, plan on achieving CO₂-neutral production in the future and have now set themselves clear targets against which they will be measured. We are therefore observing a much greater interest in resource-saving and low-emission solutions. Ultimately, a sustainable painting process in particular will be key to car manufacturers achieving their goals. We are already discussing with customers how exactly the reduction of resource consumption can best be incorporated into their purchasing decisions regarding paint or final assembly systems. Fortunately, there is a lot happening at the moment.

What would such a resource-saving solution be?

One shining example, quite literally, is the sharp application of paint without overspray, which allows roofs to be painted in a different color or contrasting colors to be applied without prior

masking and thus without plastic waste and unnecessary paint consumption. In addition to this development milestone, there is of course a lot of detailed progress: With the **EcoBell Cleaner D2**, for example, we offer a cleaning device that the painting robot approaches to clean its atomizer of paint residues. This reduces the consumption of environmentally harmful cleaning agent by 85 percent.



Dr. Jochen Weyrauch

Per car, this saves 50 milliliters, which may not sound that exciting. But with 89.5 million cars painted worldwide in 2019, that would be around 18,000 bathtubs filled to the rim. So, there is a lot of potential here. For many years we have been the market leader with our **EcoDryScrubber** system for highly efficient overspray separation in spray booths. The topic of resource conservation, which is now receiving so much media attention, has been a pacesetter for us in product development for a long time now.

You mentioned that customers are paying greater attention to resource-saving production technology. How does this affect your strategy?

The answer lies not least in our latest acquisition in environmental technology: In October 2018, we acquired the Megtec/Universal Group. In doing so, we doubled our existing business in exhaust-air purification technology. In 2019 we were able to book orders worth around € 450 million and we will continue to grow in the coming years. Clean air is by no means an issue that only concerns the western world. We see strong demand especially in the emerging markets since government regulation is increasing.

Dürr has made digitalization a top priority. To what extent do digital products contribute to sustainable production?

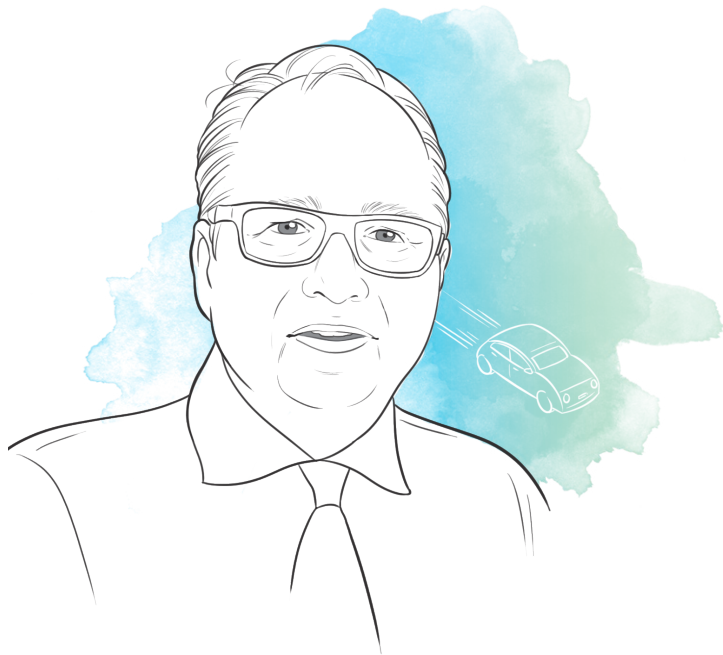
Ultimately, all digital innovations serve to increase productivity. Perhaps you read the article on artificial intelligence in the painting process earlier in the magazine. At the end of the day, we aim to avoid equipment failure and increase availability through fault predictability. We thus help to avoid production problems. This means less waste of resources and better use of machines and equipment. Or take, for example, **intelliDivide**, a smart application by HOMAG. Among other things, you can use it to minimize waste when dividing wood panels. Economic and environmental benefits are not mutually exclusive – quite the contrary.

Many thanks for the interview.

WITH JOINT FORCES

The US Megtec/Universal Group has been part of the Dürr Group since October 2018. The acquisition resulted in a doubling of the existing business in future-oriented environmental technology. Customers now benefit from faster service, the combined experience of a larger development team, and a more comprehensive product portfolio in exhaust-air purification technology – all from a single source.

TEXT: HEIMO FISCHER – ILLUSTRATION: LUISA JUST



Gerald Norz,
Head of Worldwide Service

The service expert can today provide faster service to his customers.

“The merger of Dürr and Megtec/Universal has made our service network significantly stronger. Not only do we have twice as many staff, we also share our technical knowledge. This enables every service technician to cover all products – regardless of whether they originally come from Dürr or Megtec. We always assign tasks to those employees who can reach the customer most quickly. I also see benefits in growth markets like Taiwan, where we have had a permanent service presence since the merger with Dürr. At Megtec we used to have our employees flown in specially – this was time-consuming and expensive.”

“Now we are much closer to the customer.”



Erhard Rieder,
Head of Worldwide
Product Management

Our employees' wide-ranging knowledge offers new opportunities for product developers.

"We are drawing on a wide range of knowledge and experience more than we did before. A good example of this is thermal exhaust-air purification. We have found that experts from both companies have specialist knowledge in very different areas. They are now applying this in further developing exhaust-air purification. We are thus able to tailor our products even better to customer requirements."

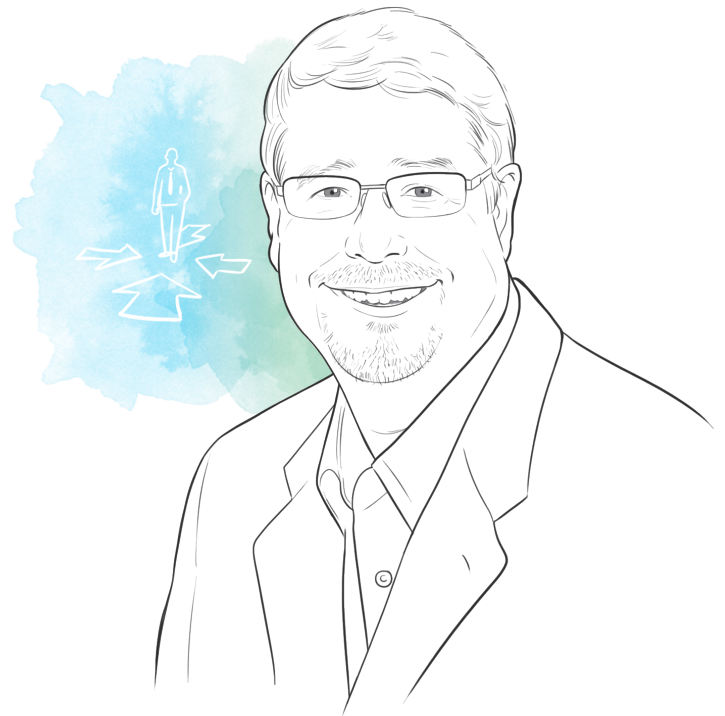
"Today we are applying a significant amount of knowledge in developing our products."

The initial concerns of the Head of Sales were unfounded – customers invariably see the merger as a gain.

"Right after the merger, we put together a joint sales team. We were really careful about the signals we sent out. We were concerned that customers might be skeptical due to potential disadvantages with the product range or the service. We have since learned that our concerns were unfounded. The response we

have received has been positive across the board. Our customers appreciate the enhanced service and the increased range of products from a single source. This is also reflected in the order numbers, which are developing at a very gratifying rate."

"The response we have received from our customers has been positive across the board."



Rodney Schwartz,
Head of Sales North and
South America

Sharp edge



SHARP EDGE

Painting cars is an art in itself. Painting stripes or contrasting colors on car bodies costs manufacturers a lot of time and material. **EcoPaintJet** offers a solution.

Dürr's new system works so precisely that not a single drop of paint misses its target.

TEXT: HEIMO FISCHER — PHOTOS: AUDI, SASCHA FEUSTER



Conquering overspray together with the Dürr team: Developer Hans-Georg Fritz is delighted with this revolution in the painting process.

“We have finally found a way to apply paint with maximum precision and without any waste.”

HANS-GEORG FRITZ,
MANAGER NEW TECHNOLOGIES
DÜRR SYSTEMS AG

The robot arm glides over the car body; the applicator at the end of the arm applies black paint in clean swathes. The black strip becomes gradually wider, its lines standing out razor-sharp from the background. Developer Hans-Georg Fritz is delighted with this success. “We have finally found a way to apply paint with maximum precision and without any waste.” Known as **EcoPaintJet**, this Dürr method has been in use in the automotive industry since last year.

In developing the **EcoPaintJet**, Fritz and his team have found a solution to a problem which the industry has been working on for a long time. Anyone who has ever tried to apply glitter paint using a spray can will be familiar with the problem. The paint lands not only on but also next to the item to be painted. In car factories, this problem has been given a name: experts refer to it as overspray.

Over the years, developers at Dürr have managed to significantly reduce the amount of overspray thanks to better atomizers. However, even with the best technology currently available, at least 20 percent of paint still misses the car body and goes to waste.

Precise paint application is especially important when manufacturers paint cars in several colors. This is happening more and more often, because customized vehicles are on trend. Some buyers request cars with decorative stripes on the hood, while others want the entire roof to be painted in a different shade. These contrasting colors are particularly suitable for electric vehicles. The large batteries located in the vehicle floor lead to an increased height in some models. Applying the right stripes to the rocker panel or where the roof meets the side panel makes these cars look flatter and sportier.

This elegant look does, however, take a lot of effort to produce. First of all, the entire car body must pass through the painting line. Once everything has dried, workers apply masking film and only leave certain areas exposed. Another paint cycle then follows, after which the masking film is removed. This wastes working time, paint and masking material – a costly method, not to mention the damage caused to the environment. Some painting lines process tens of thousands of car bodies per year that are painted in several colors.

The secret of the nozzle plate

The initial ideas for a more cost-effective method were conceived back in 2008. At Dürr’s technical center in the corporate Bietigheim-Bissingen headquarters, developers were working hard to come up with a solution. There they have access to laboratory benches and a paint booth with a



The EcoPaintJet applies paint onto the vehicle roof, one swathe at a time. The paint is applied so accurately that masking of the remaining surfaces is no longer necessary.



Tiny jets of paint are directed onto the surface. The traditional process, by contrast, atomizes the paint into a mist that cannot be applied sharply.



Customized: Contrasting colors on the roof or a decorative strip give the car a personal touch.

“The nozzle plate is the centerpiece of the EcoPaintJet.”

HANS-GEORG FRITZ,
MANAGER NEW TECHNOLOGIES
DÜRR SYSTEMS AG

robot to put the newly developed components to the test straight away. Hans-Georg Fritz picks up a very thin metal plate. “This is the nozzle plate, the centerpiece of the **EcoPaintJet**”, says the chemical engineer. Upon closer inspection, one can see more than 50 tiny holes on the surface. Rather than discharging droplets, these holes allow precisely metered paint jets to pass through and onto the car body.

Before the nozzle plate was completed, there were some important questions to answer. At what speed should the paint hit the car body? How small should the holes be and how large the distance to the surface to prevent the jets from breaking into droplets? Each answer required research, simulation and countless tests.

Even creating the tiny openings on the nozzle plate was a challenge. “Anyone who has ever drilled holes in a wall will be familiar with the problem”, says Fritz. The holes almost always end up a little wonky. For the nozzle plate this means that the paint jets would not be equally

spaced when hitting the car body, so paint would be missing in some areas. And how was the problem solved? Fritz grins. “This remains our secret.”

The **EcoPaintJet** applicator, which is positioned at the end of the robot arm, works as precisely as an inkjet printer. Nevertheless, Dürr did not adopt the same operating principle. “Ink is like water, whereas paint is viscous, which is why it’s much more complicated to process”, explains Fritz. A single blocked nozzle could cause ugly and expensive mistakes in the painting line. For this reason, large manufacturers of car paints were also involved in this development. For years they would create new mixtures – until the quality was just right.

Speaking to Hans-Georg Fritz, it soon becomes clear that the **EcoPaintJet** not only offers accurate paint application. “The applicator is embedded in a digital system.” A robot arm moves it over the car body securely and in the most effective way at a 30-millimeter distance. In doing so, it follows the instructions of the software in which the car body measurements are stored. However, there is a catch. “Even car bodies of the same model have minute differences”, says Fritz. Discrepancies of up to two millimeters are common – too much for a perfect paint finish.

“There is a huge interest in the new technology generally. Also because it makes production more sustainable.”

MEINHARD LUTSCH, PRODUCT MANAGER

BEFORE:



50 min

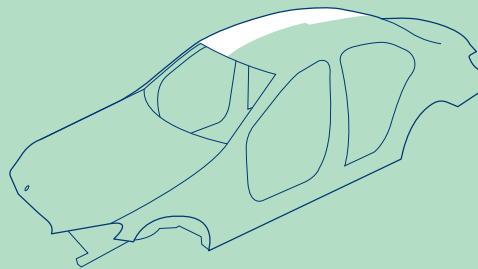
IS THE AVERAGE TIME IT TAKES TO APPLY AND REMOVE MASKING



15 m²

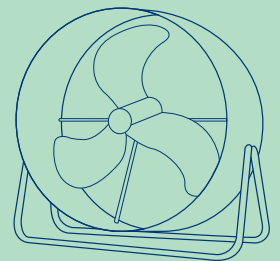
OF FOIL AND MASKING TAPE ARE USED PER CAR BODY

AFTER:



120 sek

IS ALL IT TAKES THE ECOPAINTJET TO APPLY THE SECOND PAINT



25 %

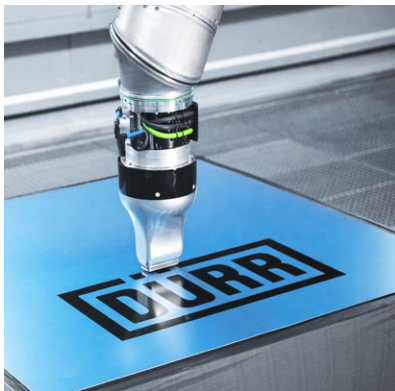
LESS ENERGY IS REQUIRED TO APPLY THE SECOND PAINT



More information available here:
www.durr-group.com/sharp-edge/



He knows what customers want: Product Manager Meinhard Lutsch (left) talks to developer Tobias Berndt.



The EcoPaintJetPro can even paint intricate patterns – such as the Dürr logo shown here.



This is why, prior to painting, a camera scans the entire surface within a few seconds and compares the measurement results with the stored data. A special software program in the control system then corrects all lines of paint due to be applied by the applicator. This device compensates for any waves and curves by turning slightly at the right time, thus adjusting the shape of its lines to the car body. “Only if all influencing factors are perfectly matched do we get an optimum paint finish”, says Fritz.

The **EcoPaintJet** went into operation in the first car factory in 2019. Going forward, it is expected to be used in an increasing number of new painting lines, and even existing plants can be retrofitted. According to Product Manager Meinhard Lutsch, there is a huge interest in the new technology generally. Not only because it eliminates

any additional work previously required in the manufacture of multi-colored cars, but also because it makes production more sustainable: it lowers the energy consumed during car body drying by up to 25 percent. And it saves around 15 square meters of masking film per car.

Soon to be used in aircraft production?

There is no other area where customers’ paint application demands are as high as in the automotive industry. This is why the technology must be especially sophisticated – and other industries can adopt it without any problems. “We are in contact, for example, with a manufacturer of garage doors”, says Lutsch.

The developers at Dürr firmly believe that painting without overspray will prevail. They therefore want this technology to become even more

SOCIAL MEDIA REACTIONS AFTER THE PRODUCT LAUNCH



Steven Topping

SUPERINTENDANT
AT THERMA-TRON-X, INC.

**“We saw this at SURCAR
this week. Amazing
technology emerging
from Durr!”**



Abhishek Sharma

HEAD PAINT SHOP 3 WHEELER
PLANT TVS MOTOR COMPANY

**“Great time saver
technology”**



Carsten Rietig

HEAD OF PLANNINGDEPT.
PAINTSHOP AT VOLKSWAGEN AG

**“As soon as the technology is
ready for series production,
I’ll be first in line!”**



Big Bang at the Open House: Developer Fritz presents brand-new innovations at the Bietigheim-Bissingen customer fair.

versatile. Their latest model is called **EcoPaint-Jet Pro**. Unlike its predecessor, each individual hole in this model’s nozzle plate can be opened and closed. “This enables products to be customized even more”, says Lutsch. It will lead to previously unimagined opportunities for applying graphic elements to car bodies in series production.

Aside from carmakers, aircraft manufacturers are also interested in the **EcoPaintJet Pro**. They could use it to apply some logos and decorations to their planes more quickly and easily.

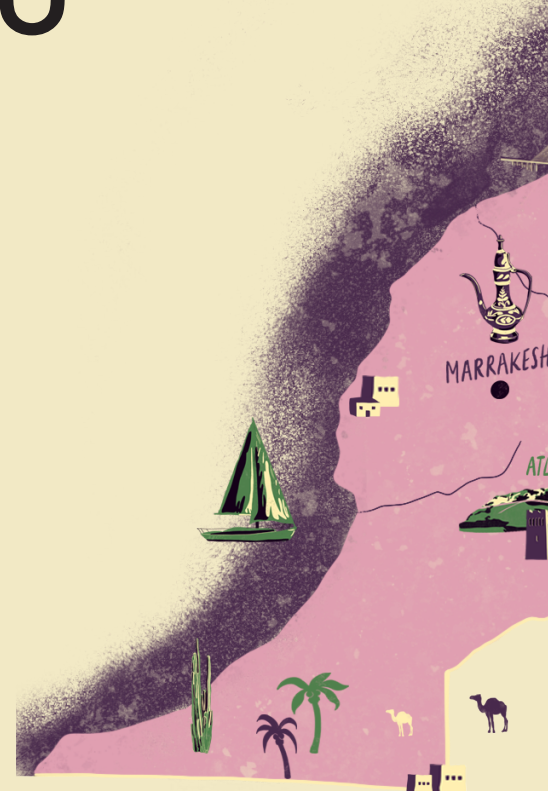
The engineers and software experts at Dürr are already thinking up the next vision. They want to be able to paint ever-larger areas of a car body without generating any overspray – and one day even entire vehicles.



SOUTH KOREA *meets* MOROCCO

For carmakers, North Africa is an interesting emerging market. They are building new plants – with Dürr providing some of the painting technology. Construction sites need project experts who are willing to immerse themselves in another culture and take the helm. Mi Hyang Shin works for Dürr in the South Korean city of Seoul – at least in theory. However, for a year and a half she turned her life upside down and gained some of her most interesting experiences in Morocco.

TEXT: CLAIRE BUSCHE — PHOTOS AND ILLUSTRATION: ISTOCKPHOTO, CHEON KIM, MONIEK WIESE



Ms. Shin, how did you come to work in Morocco?

It has always been my wish to work abroad. I am intrigued by other cultures and people. And then an order came in for a paint shop for a South Korean carmaker in the Moroccan city of Kenitra. When I was asked if I could see myself supporting the site manager locally, I seized the opportunity.

So you said yes without any hesitation?

Well, I did need a bit of time to think about it – this was definitely out of my comfort zone. Moving to a different country for work was already very exciting – and even more so as a woman in a male-dominated job. Not only did I have to find my bearings in a city I wasn't familiar with, I also had to hold my own in a new environment.



Whether technology or culture: Mi Hyang Shin embraced the adventure and took on the position of site manager in Morocco.

How did you plan your stay in Morocco from South Korea?

Dürr helped me sort out important organizational tasks, such as finding somewhere to live and applying for a visa. Our personnel department was always a good port of call.

Was the job how you had imagined it to be?

(Laughs) Well, not quite. Since the site manager was unable to take on his position, I stepped in and suddenly found myself being site manager with everything that goes with it.

Did you notice any differences in the working methods?

I really had to get used to suppliers being more laid back about deadlines. I got quite stressed about this at first, but it improved over time.

What are your best memories?

We had an incredible team spirit – together, we found a solution for every problem and every change of plan. You don't find colleagues like that everywhere. And the best moment of all was when the first painted car left the finished plant. I won't forget that feeling for a long time.

How did you get on in a culture you weren't familiar with?

I was a bit worried initially. I had hardly come into contact with Islamic culture before I went out there. But my local colleagues made it easy for me. Thanks to their open and helpful approach, I quickly felt at ease. I tried to learn at least a few words of Arabic and French, which was very helpful. I then found a local language teacher, who also helped me immerse myself a bit into Moroccan culture. I even attended a traditional wedding, which was an unforgettable experience. We celebrated until the early hours, and the bride and groom changed their outfits about five times. In South Korea, the whole wedding is over within an hour.

It sounds as though you made some good friends!

Yes, definitely. Even though I really missed Seoul, it was a weird feeling to be leaving Kenitra again after a year and a half; it had become a second home to me. I am still in touch with my Moroccan friends and always look forward to visiting them when I am there, as was the case just recently.



IN DIALOG

TEXT: HEIMO FISCHER — PHOTOS: SASCHA FEUSTER, THOMAS HOPPE, ALBRECHT SCHÜRHOFF

“During a number of different workshops that were held over four weekends, they were asked to work on a vision for the company.”

HEIDI SCHMITT,
HEAD OF HUMAN RESOURCES
AT SCHENCK ROTEC

People change – and with them the companies they work for. To find out what tomorrow’s working environment should look like, the Dürr Group listens to its employees.

More information on people development and careers at the Dürr Group is available here:



www.durr-group.com/en/career

Are young colleagues taken seriously? Do they have a say? Is there room for their needs? Patrick Manske gives a clear answer to these questions. “I’ve never felt as though my opinion didn’t matter”, says the engineer. At Schenck RoTec, the Darmstadt subsidiary, he has held a leading position in customer service since April 2020. Nevertheless, he is fully aware that “you have to assert yourself to be heard. But not everyone does.”

The management obviously took the same view. Keen to create a platform for more employees to enter into dialog, Schenck last year invited 30 young employees to attend the “Young Generation Dialogue” initiative. “During a number of different workshops that were held over four

weekends, they were asked to work on a vision for the company”, says Heidi Schmitt, Head of HR at Schenck. Manske was one of those selected.

From error management culture to innovation

How significant will megatrends, organizational issues and leadership topics be in 2025? This was one of the central questions discussed by the participants. It was up to them to decide what aspects they wanted to focus on during the series of seminars. Some chose the topic of error management culture, others opted for networking in the company or employee retention.



Relaxed chat with the boss: Schenck colleagues discuss the results with Ralf W. Dieter, CEO of Dürr AG.



Good day sunshine: To make the most of the weather, parts of the workshops are held outside.



“You have to assert yourself to be heard. But not everyone does.”



PATRICK MANSKE,
SCHENCK ROTEC

Manske joined the working group for innovation. However, rather than focusing on the search for technical solutions, the objective was to think outside the box; it was to think about societal change impacting the company, and about opportunities that can be derived from such trends. Even ideas that at first seemed far-fetched were welcome. One such example was whether the growing online trade could have an effect on the company itself.

Members of the management and the Board of Management accompanied the workshops. “They were very interested and spent a lot of time with us”, says Manske. After the series of workshops had ended, his group continued to meet once a month to consolidate and further explore the results.

Whether the young generation differs from their older colleagues in terms of what makes them tick at work is not a question for which Manske has a blanket answer. The baby-boomer generation

does have a reputation of living for work, while younger people are said to attach greater importance to a work-life balance. “But there are also people in my generation who want to pursue a career and work a lot.” Manske himself had already completed a cooperative state university program in engineering when he embarked on a master’s degree in commercial information technology in his free time. There is one area, however, where he sees differences between the generations. “For younger people, sustainability and climate protection are of central importance.” Although this view is also shared by the baby boomers, it is less pronounced.

Struck a chord

Another initiative at Dürr Systems addressed the expectations of different generations toward management as well as their needs and goals. These topics resonated with more employees than expected. Almost 150 people applied for 40 workshop places. “We clearly struck a chord”, says project manager Anna Vollmer.



Perspective:
Gert Friedrich
presents the
results of his
group.



An important stage in the workshop: Becoming aware of one's own expectations around management and defining them.

Looking at leadership from different angles: Aline Damian leads a 2-strong team herself.



Each of the groups was made up of participants from the same generation. The teams were asked to define what the company could contribute toward the further development of its employees. Following the workshops, the results were presented to the other participants and the management representatives. "This revealed some interesting generation-specific differences", says Vollmer. People at the beginning of their careers attached greater importance to professional development – ideally with a personal career plan. Employees up to the age of 40 expressed a wish for more dialog with their line managers, greater transparency in decision-making and a

more flexible work routine. For the older generation, on the other hand, a feedback culture practiced in the company was of central importance. The participants are now continuing to work on their topics. The focus is on the areas of leadership and communication as well as on feedback culture. Last year the participants of the Dialog initiative, together with works council representatives and personnel developers, created a feedback sheet for discussions with employees.

Managers also receive assistance in implementing working arrangements in line with current requirements, one example being mobile

“For me it’s exciting and motivating to have a personal dialog with the management.”



CELINE HAUG,
APPRENTICE INDUSTRIAL
CLERK AND IN CHARGE OF
THE YOUTH AND APPRENTICE
REPRESENTATION AT HOMAG
IN SCHOPFLOCH

working. During tailor-made training sessions, managers can learn how to organize a team whose members work in changing locations or have part-time jobs.

Interactive exchange

Apart from other formats, Dürr’s subsidiary HOMAG operates a special type of generation dialog at its Schopfloch site. Twice a year, 50 apprentices and cooperative state university students meet one of the managing directors there. The feedback is positive. “For me it’s exciting and motivating to have a personal dialog with the management”, says Celine Haug, who is in her second year of apprenticeship as an industrial clerk and is also Head of the Youth

and Apprentice Representation. For her, these regular meetings are a sign of trust and appreciation.

To make sure the dialog between the generations is made as easy and relaxed as possible, HOMAG also relies on digital technology during the meetings. Those who want to participate don’t even have to speak up anymore. “The participants can send in their questions via smartphone using a conference tool. A projector then displays the text for everyone to see”, says Head of Education Center, Steffen Stippl. This also gives more reserved participants the chance to address awkward issues – these are, after all, particularly interesting.

**Three questions for
Susanne Schlegel**



How would you describe your personal error management culture?

Everyone makes mistakes. My basic rule is: 80 percent of decisions should be right, the other 20 percent might have to be corrected. This means I won’t rip anyone’s head off if they make mistakes, but I do expect people to take responsibility for them. Being open about mistakes is important, whereas hiding mistakes can lead to further negative consequences. This is what we need to avoid. That said, I won’t let anyone shirk their responsibility. I ask how the mistake could have happened and how the person would suggest solving the problem. We will then decide together how to proceed.

The evening before an important appointment, you notice that you have made a crucial error in your planning. What do you do?

If I can still correct the mistake, I will work until I have put everything right. Otherwise I will have to tell the participants exactly what the issue is and apologize for it. I would then ask for some extra time so I can rectify the mistake. This kind of open approach is disarming, and I have never had a bad experience with it.

How do you see the error management culture in your company?

I think we’re on the right track at Schenck. But there are still a few development steps we need to take. We must further promote self-directed working and encourage employees to think more in terms of solutions rather than problems. Whoever has made a mistake often knows best what the right measures are, and should actively define them.



An open error management culture was on the wish list of many people taking part in Schenck’s dialog event. Susanne Schlegel, CFO of the Darmstadt-based Dürr subsidiary, explains how managers can contribute toward this.



DÜRR AT A GLANCE

KEY FIGURES¹

		2019	2018	2017	2019/2018 Change in %
Incoming orders	€ million	4,076.5	3,930.9	3,803.0	3.7
Orders on hand (Dec. 31)	€ million	2,742.8	2,577.2	2,449.4	6.4
Sales revenues	€ million	3,921.5	3,869.8	3,713.2	1.3
of which abroad	%	82.9	84.3	86.9	-1.4 pp
EBIT	€ million	195.9	233.5	287.0	-16.1
EBIT before extraordinary effects ²	€ million	263.1	274.9	283.7	-4.3
EBT	€ million	174.7	219.7	267.3	-20.5
Net profit	€ million	129.8	163.5	199.6	-20.6
Cash flow from operating activities	€ million	171.9	162.3	119.8	5.9
Cash flow from investing activities	€ million	-231.8	-30.1	-17.2	
Cash flow from financing activities	€ million	60.8	-134.0	-152.2	
Free cash flow	€ million	44.9	78.4	14.3	-42.8
Equity (with non-controlling interests) (Dec. 31)	€ million	1,043.4	992.2	900.5	5.2
Net financial status (Dec. 31)	€ million	-99.3	32.3	176.3	
Net working capital (Dec. 31)	€ million	502.7	441.4	373.7	13.9
Employees (Dec. 31)		16,493	16,312	14,974	1.1
of which abroad	%	50.4	50.0	47.7	0.4 pp
Gearing (Dec. 31)	%	8.7	-3.4	-24.3	12.1 pp
Equity ratio (Dec. 31)	%	26.9	27.4	25.6	-0.5 pp
EBIT margin	%	5.0	6.0	7.7	-1.0 pp
EBIT margin before extraordinary effects ²	%	6.7	7.1	7.6	-0.4 pp
ROCE	%	16.9	24.0	38.6	-7.1 pp
EVA	€ million	39.4	76.0	142.7	-48.1
Dürr stock (ISIN: DE0005565204)					
High	€	42.26	57.18	60.28	
Low	€	20.76	27.30	37.00	
Close	€	30.38	30.53	53.28	
Number of shares		69,202,080	69,202,080	69,202,080	
Earnings per share	€	1.79	2.27	2.78	-21.1
Dividend per share	€	0.80 ³	1.00	1.10	-20.0

¹ The IFRS 16 International Financial Reporting Standard was first applied in fiscal 2019. In addition, the Megtec/Universal Group, acquired in October 2018, was consolidated on a full-year basis for the first time. Please refer to the explanatory notes on the figures and the comparability with previous years from page 55 in the 2019 annual report.

² Extraordinary effects: € -67.2 million (2019), € -41.4 million (2018), € +3.3 million (2017)

³ Dividend proposal for the annual general meeting.

COMPANY PROFILE

The Dürr Group is one of the world's leading mechanical and plant engineering firms with extensive expertise in automation and digitalization/Industry 4.0. Its products, systems and services enable highly efficient manufacturing processes in different industries. The Dürr Group supplies sectors like the automotive industry, mechanical engineering, chemical, pharmaceutical and woodworking industries. It generated sales of € 3.92 billion in 2019. The company has around 16,500 employees and 112 business locations in 34 countries. The Group operates in the market with the brands Dürr, Schenck and HOMAG and with five divisions.

OUR FIVE DIVISIONS

Paint and Final Assembly Systems	Application Technology	Clean Technology Systems	Measuring and Process Systems	Woodworking Machinery and Systems
<ul style="list-style-type: none"> Paint shops Final assembly systems Automotive filling technology¹ Assembly technology¹ Testing technology¹ 	<ul style="list-style-type: none"> Paint application technology Glueing technology Sealing technology 	<ul style="list-style-type: none"> Air pollution control Noise abatement systems Coating systems for battery electrodes 	<ul style="list-style-type: none"> Balancing technology Industrial filling technology Automotive filling technology¹ Assembly technology¹ Testing technology¹ 	<ul style="list-style-type: none"> Machinery and equipment for the woodworking industry
€ 1,243.8 M SALES	€ 592.8 M SALES	€ 395.3 M SALES	€ 410.4 M SALES	€ 1,279.1 M SALES
€ 64.5 M OPERATING EBIT	€ 63.3 M OPERATING EBIT	€ 23.3 M OPERATING EBIT	€ 40.2 M OPERATING EBIT	€ 82.7 M OPERATING EBIT
3,634 EMPLOYEES	2,306 EMPLOYEES	1,418 EMPLOYEES	2,293 EMPLOYEES	6,569 EMPLOYEES

¹ The areas marked were part of Measuring and Process Systems until December 31, 2019, and then transferred to Paint and Final Assembly Systems on January 1, 2020.



CREDITS

PUBLISHED BY
Dürr AG
Corporate Communications & Investor Relations
Carl-Benz-Straße 34
74321 Bietigheim-Bissingen
Germany

Tel +49 7142 78 - 1785
Fax +49 7142 78 - 1716
corpcom@durr.com
www.durr-group.com

CHIEF EDITOR
Günter Dielmann

EDITORS
Stefan Tobias Burkhardt, Claire Busche,
Mathias Christen, Heimo Fischer

PHOTOGRAPHY AND ILLUSTRATIONS
Audi, Thomas Dashuber, Sascha Feuster,
HOMAG Group, Thomas Hoppe, iStockphoto,
Peter Jülich, Luisa Just, Cheon Kim, Pradipta
Mahardika, Helmut Pangerl, Albrecht
Schürhoff, Moniek Wiese

CONCEPT AND DESIGN
Kirchhoff Consult, Hamburg, Germany

PRINTING
Beisner Druck, Buchholz in der Nordheide,
Germany

This magazine is also available in German.



#PASSIONEERING

Exciting impressions: Working in project management at Dürr Systems in Thailand, intern Myriam Tsakou learns what "Passioneering" means for us: implementing projects with passion and developing cutting-edge technologies.
www.durr-group.com/en/career/

DÜRR GROUP.