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The Progroup magazine

progroup

Impatto dell’IA: Insight. Innovazione. Interazione. AI Impact: Insight. Innovation. Interaktion. **AI Impact: Insight. Innovation. Interaction.** Dopad umělé inteligence: Insight. Inovace. Interakce. Impact de l’IA : Insight. Innovation. Interaction. Tak działa AI: Insight. Innowacja. Interakcja.

“Artificial intelligence is no match for natural stupidity.”

Anonymous

This is where you would usually find a foreword introducing you to the latest edition of PROfil. This time we've prepared something very special for you to introduce you to the key theme in this new edition. Our CEO Maximilian Heindl will welcome you personally – as a digital avatar. Simply scan the QR code in your preferred language and prepare to be amazed. We hope you enjoy reading the new PROfil and find it inspiring.

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ARTIFICIAL INTELLIGENCE

FROM HYPE TO ACTION

The digital transformation is well underway and innovative AI solutions have the potential to significantly change ou daily lives at work. Maximilian Heindl, Progroup CEO, agrees with this but also warns against regarding AI as some kind of panacea. He thinks there should be greater prudence in handling AI and an objective analysis of the potential ways it can be used.

Mr Heindl, you studied swarm intelligence as part of your degree. What was this all about?

Maximilian Heindl: It was all about the question of how a swarm of small robots can use algorithms not just to optimise their own behaviour, but also pass on this information to the other robots. It was really fascinating to see how a certain behaviour develops seemingly from nowhere, spreads across the whole population of robots, and enables the group to learn together.

The topic of arti cial intelligence has since advanced at a rapid pace. How signi cant do you think it now is?

You need to make a clear distinction. Many of the topics that are commonly subsumed under the buzzword AI don't actually involve AI. Rather, these are questions that can be resolved using classic, deterministic algorithms. The principle is speci ed by the programmer. The solution remains comprehensible. Speci c examples from our daily production are goods ow control and clippings optimisation. It's possible here to calculate the correct result using mathematical calculations without any AI at all. The situation is similar with commercial processes, for example the automation of payment processes. Here it's less about mathematical calculations and more about recognising patterns. We can use these technological developments to make us more e cient and competitive.

And where do you think the boundary is for AI?

For me, arti cial intelligence is when the steps that lead to an outcome are not conceived and speci ed by a human being. This involves a model that is fed with lots of data, trained constantly and then reaches its own conclusions.

That's a very narrow definition. Where do you see the starting point for AI to be used at Progroup?

I don't think the defin tion is narrow, I think it's precise. And that's important because we can only develop persuasive solutions to use in practice if we know exactly what we're talking about. I'm convinced that we as a family business in particular can and must exploit the possibilities that AI and other technologies o er. We can only exploit the full potential together – by sharing our knowledge and forming a strong network.

> "We can only exploit the full potential of AI and other technologies together."
>
> Maximilian Heindl

A major area of application is therefore knowledge management. Just like any other business, Progroup also collects a great deal of information in every possible format. At the same time, there are highly experienced colleagues who carry a wealth of their knowledge not in digitised form, but in their brains – so they really are knowledge carriers in the best sense of the expression. Getting hold of this know-how, linking it with the existing digital information and making it accessible to everyone within the company – and some of it to customers too – is an exciting application. AI-based applications may produce findings that human beings are simply unable to obtain owing to the large amount of data and the countless correlations between the data. Take maintenance, for example: It's conceivable that AI tools could identify complex failure patterns at an early stage, without an engineer needing to anticipate all the possible permutations beforehand. In this case, the AI solution acts as an accelerator that helps us to make huge e ciency gains. And this is also conceivable in lots of other areas of a company.

This all sounds very attractive. But on the other hand, great damage may be caused if the decisions made by the AI are adopted blindly.

Yes, that's correct, because an AI solution is like a black box. It's not apparent from the outside what it is doing and how it reaches its decision. This presents both an opportunity

and a risk. Ideally, I will get an outcome that secures me great competitive advantages. In a worst-case scenario, the decision made by the AI will cost a lot of money. But overall, there are clearly more bene ts because what is particularly charming about AI is that it solves problems in a di erent way to the experts and so can sometimes come up with completely unexpected solutions. But we must always scrutinise the results with a critical eye and get experts within the company to carry out a thorough professional review and impact assessment. This means that our employees' know-how is becoming even more relevant for the successful deployment of AI.

I'm very keen to demystify the term AI. Although it can help us to make better decisions and solve complex problems, it can't replace our ability to think.

To be able to work with your customers to continue shaping the market successfully, data needs to be exchanged and made available on a platform. What contribution can AI make?

Arti cial intelligence is not the answer to every issue. I don't think that it can solve interdisciplinary issues on an ad-hoc basis. This requires direct interaction between all the parties involved and consensus on the objectives and areas of application for the data. AI becomes relevant when it comes to evaluating the data. In other words, the question of how to make intelligent use of this knowledge and share it.

"Artificial intelligence is not the answer to every issue."

Maximilian Heindl

As well as networking with customers, networking between the different machines and plants is another important area of use for AI. Machine learning and the Internet of Things (IoT) are often talked about here. What's your assessment of these fields

IoT and machine learning are key foundations for AI solutions. The networking of machines and systems enables vast quantities of data to be collected and analysed. This then produces speci c models that are used to train the AI applications.

Where is Progroup positioned?

We're the technology leader in our industry. We also owe this position to consistent networking between our machines and plants. This gives us access to lots of information that in turn forms the basis for our innovation, digitisation and sustainability strategies that we're working really hard on. They translate the company's strategy into speci c areas of action and provide clear guidelines that the whole company can follow. We've already achieved a great deal in all these areas, but we're defin tely not fin shed yet. There is still a good deal of potential to exploit. That's why we have teamed up with the Fraunhofer Institute and other partners to launch the "Factory of the Future" project.

What does this involve?

Starting from a blank sheet of paper, we're discussing what a corrugated sheetfeeder plant will look like ve to ten years from now – from its construction through to regular operation. This is a revolutionary approach because we're not asking ourselves how we can develop existing factories starting from the status quo. Digitisation and automation play a major role in this project. We're also reimagining other topics, such as occupational safety, chronological and logistical work ows, and lots more.

What objectives are you pursuing?

The construction of our plants follows two basic principles: we always use the very latest technology and we adopt a very standardised approach. With the "Factory of the Future" project, we are elevating this principle to a new level. Issues such as costs, e ciency and pro t-ability will be addressed in just the same way as the involvement of employees and sustainability. Ultimately, we aspire to champion the circular economy to an even greater extent and build a carbon-neutral

Confidently overseeing change: In a t end-driven world, Maximilian Heindl adopts a prudent, visionary approach in the decisions he makes for Progroup and its customers.

factory. This is a continuous process involving our growth and operations experts.

Nevertheless, the use of AI is changing the quali cation pro le for employees.

Yes, in the medium term we'll need different quali cations to work with this technology. However, things were no di erent when it came to automation. The situation with AI will be similar. But what's becoming more and more important is the ability to constantly question yourself and the knowledge you have. This applies to everyone, including me. This is because in some instances AI will deliver surprising results that we need to be open-minded to and embrace.

If you look at the discussion about arti cial intelligence within society, people are increasingly articulating fears and misgivings. Is this an assessment that you don't share?

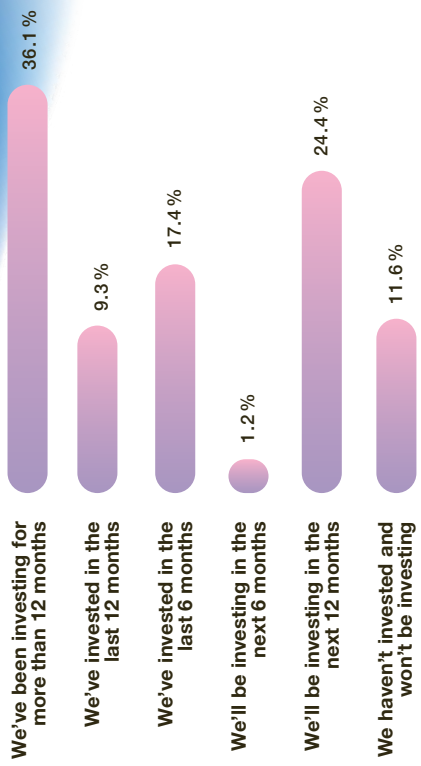
Some parts of society are worried about streamlining and a loss of jobs. But let's look at the facts: Companies are complaining about a shortage of skilled workers, and employees are complaining about being overworked as a result. This issue will become even more acute as the baby-boomer generation retires. AI o ers us the chance to compensate for the shortage of skilled workers, at least to a certain degree. That's why I'm asking people to look at the opportunities. Yes, we need to keep a careful eye on the risks, but this mustn't mean that we reject the technology per se. This is because it's always more expedient to be open to new developments and work actively to help shape change.

GOOD NEWS

Energy crisis, conflicts, disasters: The news mostly focuses on reporting negative events. We're providing some balance with this good news. Read all about successes, both big and small, from the economy, the industry and the world of Progroup.

Artificial intelligence as an opportunity

9 in 10 companies in Germany have invested or will be investing in AI.



Source: Surveys on artificial intelligence by th German Association for the Digital Economy

25.2% of small and medium-sized enterprises in Germany are already using generative AI to research information. It is only used with a similar level of frequency to prepare texts (24.6%). Other applications, such as data preparation and evaluation (11.5%) or automation of internal processes (10.5%), are mentioned much less often.

Handelsblatt | Representative special survey conducted from 5.3. – 2.4.2024 | Source: DZ Bank

Championing sustainable development

SustAIn – the sustainability index for artificial intelligenc

Researchers from Algorithmwatch, TU Berlin and the Institute for Ecological Economy Research have developed a self-assessment tool for companies that provides guidance on how sustainable their AI systems are.

Trust and reliability confirme

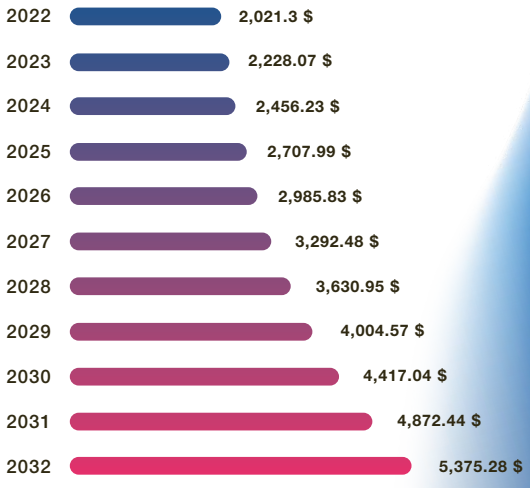
Investors are continuing to choose Progroup:

The company has secured financing totalling more than one billion euros. Particular success: The issuanc of two bonds with a total volume of 750 million euros. This is a huge vote of confidence from the investors in Progroup, the business model and its future viability.

The global market for artificial intelligence in the packaging industry is estimated to grow from 2,021.3 million US dollars in 2022 at an average annual growth rate of 10.28% to 5,375.28 million US dollars by 2032. This is the conclusion of a study conducted by the Canadian consulting fir Towards Packaging.

Huge potential for growth

Artificial intelligence in th packaging industry



Source: www.towardspackaging.com

61% of companies and 51% of employees in the manufacturing sector are already seeing their productivity boosted by artificial intelligence

This was revealed by a survey conducted by IW Consult on behalfof Google. In the economy as a whole, the figures are just 46% of companies and 40% of employees.

Source: IW Google study “The Digital Factor” 2024

We continue to grow:

We’re pursuing the Progroup growth strategy consistently. In 2024 measures include ...

... the start of production at the PW15 corrugated sheet-feeder plant in Petersberg, Rhineland-Palatinate ...

... acquiring the former Sappi site in Stockstadt, Bavaria. The plan is for a state-of-the-art factory for sustainable production of containerboard to be operating here by the end of the decade, creating roughly 200 jobs ...

... the construction work, which is proceeding on schedule, for our second waste-to-energy plant in Sandersdorf-Brehna ...

... and the construction of our latest PW16 corrugated sheetfeeder plant in Cessalto, Italy.

"AI won't take over the world. If it does, it won't be the AI that we envisaged. It will be an AI that we don't understand."

Tim Berners-Lee, founder of the World Wide Web

1 VISION


1832

ON THE PATH TO THE NEXT INDUSTRY REVOLUTION?

JH HOLDING THINK TANK WILL STRENGTHEN FAMILY COMPANIES WITH INNOVATIVE IDEAS

A picturesque villa in the heart of the southern Palatinate region, surrounded by enticing vineyards and at the foot of the historic Hambach Castle – this is where the future for family companies in the packaging industry will now be written. In the former domain of the wine merchant Johann Hartung, who built the impressive building with its carriage house, oriel windows, towers and impressive sandstone staircase in 1892, we find Jürgen Heindl. He and his two sons Max - milian Heindl and Vinzenz Heindl have arranged to meet to tour the building site, because this is where the new home of JH Holding is going to be created by 2026. It is a think tank that has set itself ambitious targets.

Progroup's founder is now the deputy chairman of the Supervisory Board of the corrugated board and paper giant and runs JH Holding together with his son Vinzenz. The company is the owner of Progroup and the Professionals Academy. The older son, Maximilian Heindl, is the second-generation CEO at the helm of Progroup. The two brothers are equal partners in the holding company.

"Looking at our calendars, coordinating a joint visit to the building site is no easy task," laughs Jürgen Heindl as he opens the elaborate front door with its wrought-iron door ttings. The fact that they've managed to do so underlines once more how important JH Holding is – to Progroup and to all medium-sized family companies in the packaging industry.

Providing knowledge and entrepreneurial vision

JH Holding, which is set to have up to 25 employees from the elds of finance, consultancy and IT, will o er interested companies not just solid market knowledge and in-depth industry expertise (see p. 26). It is also a think tank that will come up with innovative approaches: One of them is the vision of a strong alliance between family-run, medium-sized packaging manufacturers. "A cooperation like this has the potential

"JH Holding combines a sense of tradition and family values with an absolute commitment to championing innovations and meeting the very latest standards."

Jürgen Heindl

Jürgen Heindl has a clear plan for what role JH Holding should play: Coming up with new ideas and providing knowledge to continue to develop and strengthen the alliance between family-run packaging manufacturers.

to reshape the market," says Jürgen Heindl with confi ence, adding: "European accounts regularly commission orders right across Europe. Since they want to receive deliveries from one source in all countries, they have previously almost always worked with fully integrated groups." The reason for this is that, unlike small and medium-sized packaging companies, their Europe-wide mill system is already active.

Progroup CEO Maximilian Heindl agrees: "In cultivating the market, I see an area with huge potential for transformation in the future. We need to work together with our customers to consider new strategic cooperations so we can adapt ourselves to the new market structure." He adds: "Physically, the structure essentially already exists – Progroup with its around 500 customers. It's now all about bringing this together in a way that meets the level of demand and needs of the market to create a virtual structure. This will enable us to reduce costs and achieve economies of scale. If we seize this opportunity, together we'll be able to create a powerful, comprehensive structure in the future."

He really appreciates the work being done by JH Holding as a valuable contribution in awakening this spirit of

> "In cultivating the market, I see an area with huge potential for transformation in the future."
>
> **Maximilian Heindl**

cooperation, bringing together all the companies involved and making them stronger as one unit.

Shaping the future from the past

Together with his brother Vinzenz and father Jürgen, he is inspecting the plans for the detailed conversion of the centuries-old Villa Johann building in Neustadt an der Weinstraße – the Heindl family's home town. "The building essentially symbolises what JH Holding promises to deliver: A sense of tradition and values along with an absolute commitment to championing innovations and meeting the very latest standards," says Jürgen Heindl.

Working with conservationists, architects and planners, the utmost care will be taken to preserve as many of the historic features as possible: The original doors, the wood-panelled walls on the ground floor, the cast-iron internal banisters and external railings, the leaded windows and the ironwork gate will be safeguarded and reinstated. By contrast, all the building's technical systems will be upgraded: In future, 80 to 90 per cent of the building will be heated sustainably using geothermal energy.

Creating rooms and bringing them to life

An exceptional vaulted room for hosting events will be created from part of the former wine cellar. In future, one of its functions will be to provide a space for the clients of the Professionals Academy – where they can talk to each other, come

Championing entrepreneurship in a family context: Maximilian, Jürgen and Vinzenz Heindl (left to right) are very familiar with the requirements of their customers and partners and very much act accordingly.

Villa Johann extends over three floors. Jürgen Heindl is ver keen to preserve as many of the historic features as possible.

up with new ideas and build strong networks. “Our great advantage is that we’re family business owners ourselves and so we know what it means to do business in this context. And what it means for us to act in a way that gives the next generations the freedom they need to create the businesses they need,” says Jürgen Heindl.

The person in charge of the Professionals Academy is Vinzenz Heindl. The work done by the trained philosopher and psychologist encompasses another key aspect of the holding company: Collaboration between family companies that is built on trust. “Our potential USP is the emotional and personal bond between the families that can’t be replicated. We work hard every single day to champion this family-to-family approach and create a joint platform for exchanging knowledge and learning from each other.”

In addition to its annual congress, the Professionals Academy o ers other event formats designed speci - cally for the target group (see www.professionals-academy.de). They are aimed at all the generations of a business-owning family.

> “Our potential USP is the emotional and personal bond between the families that can’t be replicated.”
>
> **Vinzenz Heindl**

Once the building work has been completed at Villa Johann, there will also be new room concepts where the Academy's workshops and networking events can be staged.

Before the two generations of the Heindl family say goodbye, they also inspect the outside areas of the spacious property. This is where among other things Vinzenz and Jürgen Heindl will be implementing their shared idea of a philosopher's garden. “The green space will be a place of tranquillity and inspiration for new ideas. Maybe this will be the birthplace of the next industry revolution,” says Jürgen Heindl with a wink as he bids us farewell.

Whether there’s now a revolution or evolution in the packaging industry – it will continue to spread out into the world from the Palatinate region.

An exceptional vaulted room for hosting events will be created from part of the former wine cellar.

New ideas in an old setting: The historic Villa Hartung is being transformed into an innovative think tank for the packaging industry.

THE SUPERPOWER OF INDUSTRY 4.0

MACHINE LEARNING IMPROVES EFFICIENCY, QUALITY AND SUSTAINABILITY

Integrating machine learning (ML) in production is no longer just a vision, but is a reality that will have a lasting impact on the landscape of industry. ML algorithms are transforming production processes and opening up entirely new perspectives.

The competitiveness of any company very much depends on how e cient its production is. Machine learning can make a valuable contribution to boosting e ciency. In the paper and corrugated board industry, ML algorithms can be used to detect any discrepancies in the production process at an early stage. Using image recognition and analysis of patterns, defects such as cracks or patches can be identi ed in real time and corrected instantly. Aggregation and analysis of sensor data allows predictions to be made about machine conditions and the level of wear and tear. This enables predictive maintenance that reduces the amount of unscheduled downtime and extends the lifespan of machinery and equipment. ML has the potential to optimise production processes by monitoring and analysing data from all stages of the production work ow. This will result in real-time adjustments to production parameters such as pressure and humidity in order to maximise the level of quality and e ciency.

Next phase of digitisation

"In the second decade of Industry 4.0, innovations are very much being shaped by arti cial intelligence. At the present time, the focus is primarily on machine learning in maintenance, AI-based sensor evaluation, collaborative robotics, smart assistance for workers and semantic procedures for exchanging data," says Prof. Wolfgang Wahlster, co-founder and Chief Executive Advisor (CEA) of the German Research Centre for Arti cial Intelligence (DFKI) in Kaiserslautern, in describing how advanced the AI technology is. However, with the current language models (Large Language Models of the kind that are used for ChatGPT, for example) and hybrid neuro-symbolic AI methods – an approach that combines neural networks and symbolic arti cial intelligence – more ambitious targets appear on the horizon: "Examples are the automatic creation of digital twins from a

HOW IT ALL BEGAN

The history of artificial intelligence stretches right back to the 1950s when pioneers like Alan Turing and John McCarthy – often referred to as the founding fathers of AI – established the basic foundations for developing machines that can think like human beings. In the decades that followed, significant progress was made in areas such as machine learning, neural networks and deep learning that are helping AI technology to keep evolving all the time. Whether it's autonomous driving, smart homes, facial recognition, music streaming, medical diagnoses, navigation, human robots or digital language assistants – artificial intelligence is increasingly becoming part of our daily lives.

WHAT IS WHAT?

Machine learning should be understood as the volume of algorithms that learn independently from data. By contrast, deep learning is a method of machine learning that uses multi-layered, neural networks that provide feedback to learn correlations from a large set of data. Meanwhile, artificial intelligence involves replicating the human ability to reach conclusions and make decisions.

variety of product and service documents or deriving process models from video recordings and drawing up high-quality process alternatives. Fault-free production achieved through comprehensive quality checks in all phases of the process is also conceivable, as are mobile workstations for decentralised operation and repair services as well as experience-based product improvement using generative AI processes," says Wahlster in summary.

The AI is still weak

But what's the situation in reality? Prof. Peter Buxmann, Professor of Business Informatics at the Technical University of Darmstadt and columnist in the Frankfurter Allgemeine Zeitung, writes: "Today's artificial intelligence is mostly still based on machine learning. These applications usually work well in limited fields. We refer here to weak AI." Examples are recommendations for customers based on previous purchasing behaviour on online platforms and forecasts based on historical data, for example on customers' willingness to pay. "A key factor for these kinds of ML applications to be successful is the availability of high-quality, varied data volumes that are sufficiently large."

DATA, FACTS AND FIGURES

According to the FAIR 2024 AI Research Report, German companies expect to derive significant advantages from using AI and ML. AI and ML are currently used primarily to improve the customer experience (58 per cent), to optimise product design (50 per cent) and to support employees (46 per cent). The most common applications include improving search functions (65 per cent) and using the knowledge that is available internally. Other popular use scenarios are fraud detection (60 per cent) and optimised document processing (58 per cent).

It's all about the data

The factors driving the growth of machine learning are the increasing availability of data, advances in computing power and the increasing demand for automation and optimisation. Future developments in the Internet of Things (IoT) and increased use of edge computing – with decentralised data processing – are likely to boost the growth of this market even more. The same applies to the integration of machine learning with technologies such as processing natural language and computer vision. The Statista analysts reckon that in 2024 the German market for machine learning is worth roughly 3.15 billion euros. By 2030, they expect an annual growth rate of 36.28 per cent, which will create a market volume of 20.18 billion euros in 2030. Potential challenges are a shortage of skilled workers and data protection.

It won't work without a change of culture

According to the business consultants from Deloitte, another challenge is making ML operational at scale within a company. The solution they propose is "Machine Learning Operations", or MLOps for short. This will involve a series of practices that will ensure the reliable application of experimental ML models to productive operation. Experience shows that a holistic approach to MLOps, which includes people, processes and technologies, will ensure that ML is implemented successfully in a company. A change of culture that is supported by the company's management and technical decision-makers will be essential to allow all the advantages of MLOps to be exploited in full.

If ML is integrated carefully into the production process, it can offer the paper and corrugated board industry significant potential to increase efficiency, quality and sustainability. Despite the challenges of implementation, investing in this at an early stage will be worthwhile because the long-term benefits outweigh any drawbacks. "Decision-makers need to get a comprehensive picture of which tasks AI algorithms are suitable for and which they aren't," emphasises Prof. Peter Buxmann. The framework conditions are ideal for ML. There's more data available than ever before. In addition, computing power can be obtained from the cloud more cost-effectively than ever before. Lots of open-source tools are making it increasingly easy to create applications. "The time has come to focus intensely on AI as a topic. The second wave of digitisation has arrived."

DETECTING ANOMALIES TO BOOST EFFICIENCY

Standing still means falling behind – there's no area where this is more evident than in production. In order to make maintenance work easier to plan and more ef cient, Progroup's two business units Board and Paper are currently setting up a learning system that will predict possible downtimes and send work orders directly to the technical department. Working together closely, they will develop independent solutions for corrugated board plants and paper machines, respectively.

"We've been looking at arti cial intelligence in maintenance since long before AI became a hot topic in the media through ChatGPT," says Markus Germann, Head of the Competence Center for Corrugated Board Maintenance. And he and his team are not the only ones. An AI project has also started in relation to paper machines. "The projects are running in parallel in both business units, but also independently, because the machines involved are fundamentally di erent. Paper machines are not just bigger than corrugator machines, they also have a much larger density of process data," explains Alexander Brickmann, Head of Electrical Services at the PM2 paper factory in Eisenhüttenstadt.

Despite this, the two men chat regularly about how their developments are progressing. "We keep each other updated and we push and challenge ourselves," says Germann. Both men have exactly the same vision: AI should eventually be capable of detecting anomalies and sending speci c, preventive work orders to the relevant technical department. This should not only prevent machine faults and downtimes, but also predict and manage them to take maintenance to a whole new level.

Sensors measure data continuously

The two experts have been working with external service providers for the last year to record data via sensors and create a learning system using AI. "We're currently in the proof-of-concept phase," says Brickmann. Initially, machine data such as power, pressure and temperature are analysed offline The high level of automation in production means that the process data density has become so large that employees are simply unable to constantly scan all the measurement results alongside their daily tasks. Automated systems can handle the continuous collection of data in real time. This gathering and collection of data is the fir t step. To be able to evaluate and utilise this data, you need a suitable analysis tool that detects any deviating characteristics that could result in failure of the machine.

In the case of Paper, the offlin phase is expected to be completed in the third quarter of 2024. A er this, the necessary data should be fi tered out and checked to verify its consistency. A suitable AI model will then be chosen and implemented via an interface. This is expected to happen in the fir t quarter of 2025.

In the Board division, data from what is known as the Modul Facer at the plant in Eisfeld has been recorded. On this machine part, a paper web ("wave web") is turned into the characteristic wave shape and glued to a second paper web ("cover web"). Offlin data recording has already been completed, and the data is now being evaluated. There are also regular chats about this between Germann and Brickmann and regular meetings of the innovation management team at which challenges, new approaches, ideas and incentives are worked on.

Planning maintenance even more efficientl

The aim is to make sure that the machines don't need to be stopped during operation to perform urgent repairs. If measures can be planned and carried out when the machines aren't operating, this saves resources and costs. This may be done either at the weekend, when there is a scheduled shutdown for cleaning or a clothing change.

Nowadays, AI is also being used to monitor units that were not previously observed. "Basically, it's all about ensuring that the machines can be utilised as much as possible, thus guaranteeing our promise to deliver reliability and cost leadership," states Progroup. This bene ts customers and employees.

The maintenance intervals are extended by using machine learning and AI processes, enabling maintenance and repairs to be carried out at the precise point when they are actually required. Real-time collection of comprehensive data makes the automatic replacement of a pump a er six weeks or a smaller part every third day obsolete. That's because these kinds of measures cost time and money – especially when the replacement wasn't really necessary in the fir t place. The system tracks what needs to be repaired and, ideally, even indicates the need to take action four weeks in advance. Targeted and timely maintenance measures prevent any unnecessary downtime and costly repairs.

But the system doesn't just predict possible downtime. The data also provides information about the variance of the operating materials. Recovered paper varies in terms of its moisture content and quality, which can produce di erent results in the final product. Such variations are identi ed and compensated for quickly by AI.

Utilising real-time data effectively

What are the bene ts of continuous data transmission? A system that continuously monitors important parameters can consistently provide signi cantly better insights than humans. On the one hand, we're simply incapable of collecting and processing such vast amounts of data. Secondly, trained AI is able to recognise patterns in the data and so not just identify any deviations at a very early stage, but also 'predict' when what type of maintenance or repair will be required on which part of the machine. And last but not least, this monitoring can be performed around the clock, without any lapses in concentration or fatigue.

This constant analysis of the sensor values on the machines and systems gives the shift supervisors and machine operators a more accurate picture of the condition of their machine.

THE LEARNING SYSTEM WILL PREDICT POSSIBLE DOWNTIMES

Based on this data, individual control loops can be optimised in good time. “Even in this early phase of the project, we’ve already been able to eliminate vibrations on one machine,” recounts Brickmann. Because this also causes wear and tear. Processes and ultimately the whole of production are improved and this eases the workload for colleagues operating the machines. The new projects involve automation and sensor technology specialists from Progroup. “They're really interested in AI and are delighted to see how this all helps to make it easier to work,” reports Brickmann.

In this fir t phase of the project, Germann and Brickmann will meet with the service providers every two weeks to get an update on how the project is progressing. The offlin data is gradually fed into the AI and corresponding models are developed during this proof of concept.

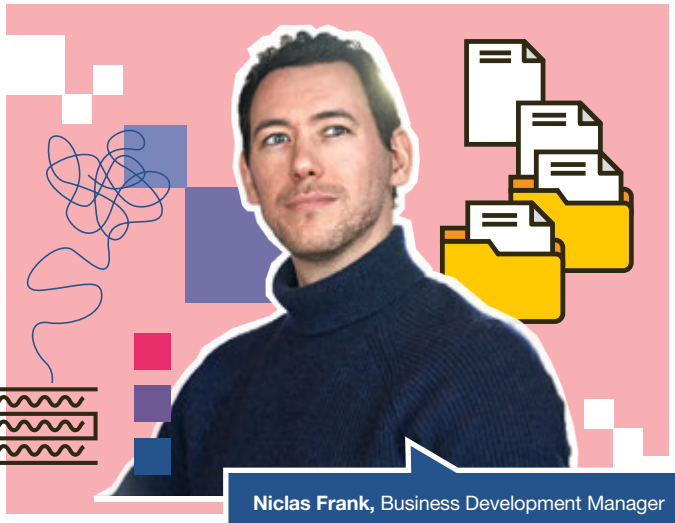
Successfully compensating for a shortage of skilled workers

If this AI strategy works in maintenance for a corrugated sheetfeeder plant, it can also be rolled out to other existing plants and all growth projects. With this in mind, the project is an important building block in continuing to expand Progroup’s innovation and technology leadership. In addition, it provides a promising approach that will enable the company to successfully compensate for the shortage of skilled workers. Using AI, the machines could be operated with the same number of employees, even if they’re still fairly inexperienced, for example. “And there wouldn't be any compromises on quality,” says Germann in summing up the key impact.

MARKET INTELLIGENCE OFFERS GENUINE ADDED VALUE TO USERS

ACHIEVING SUCCESS TOGETHER WITH SOUND MARKET ANALYSIS

“Market Intelligence” is the name of a unit of JH Holding. It provides its subsidiaries Progroup and the Professionals Academy and their customers from the packaging industry with valuable market data and sound know-how – for everyone’s benefit.



Niclas Frank, Business Development Manager at JH Holding, works with his team to keep a close eye on the relevant markets for the corrugated board and packaging industry.

In a world that is becoming ever more complex and dynamic, it has never been more exciting to utilise data in a bene cial way. In addition to having a solid, well-prepared database, analysis plays a key role here. The “Market Intelligence” (MI) unit at JH Holding helps companies to analyse macroeconomic data such as gross domestic product, infl tion and consumer sentiment in the industry and relate it to the company-speci c data such as sales, revenue, EBITDA, etc. Based on this, they can then reach conclusions about behaviour and trends.

There is an urgent need for this service from stakeholders in the packaging industry because in future commercial success will depend more than ever before on whether and to what extent companies are capable of utilising data in a smart and strategic way. This may be to make business processes more e cient, develop new business models or satisfy the increasingly stringent requirements for sustainability.

Dynamic market

The corrugated board and packaging market has developed very dynamically in the last few years. Events such as the coronavirus pandemic and trends like the boom in e-commerce have created a real rollercoaster ride – and this dynamism still exists. “The developments are rapid,” says Niclas Frank, Business Development Manager at JH Holding. The 29-year-old works in the “Market Intelligence” unit, which was established in 2023, where he monitors and analyses the markets in which Progroup, the Professionals Academy and their customers operate. The industrial engineer was previously assistant to the Board at Progroup.

Since September 2023, the “Market Intelligence” team has been bolstered by the addition of Sebastian Bönig as data scientist. The 30-year-old business IT specialist has already gained ve years of experience working in IT at a major automotive supplier. “We’re a small, agile team and we share one vision. This excites me,” says Bönig in explaining the motivation behind his career move. The fir t few projects are already up and running and objectives have been set. This was done in close coordination with the Market Intelligence steering committee, which also includes the executive team from the holding company, comprising Jürgen and Vinzenz Heindl. The fir t priority for the team is to make the

corrugated board market more transparent and compile data to get a better understanding of the big picture. The analyses provide an overview of which markets in which countries and regions are growing and which are stagnating.

Growth opportunities

"Furthermore, we assess data in relation to grammage. Will packaging become lighter in future? If it will, in which country, when and for what reasons?" explains Frank. To answer these questions, it's essential to incorporate pricing data, which is why the price level is also considered in the reports. The MI team is currently analysing the different stakeholders in the market: Who is active where in which value chain and how are the individual players operating in each economic cycle?

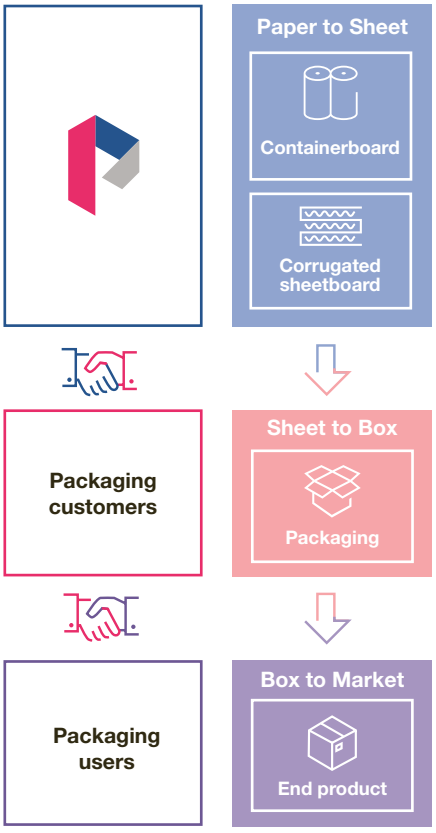
The integrated "Paper-to-Market" approach provides added value to all stakeholders and the foundation "for exploiting the huge growth opportunities for paper as a recyclable product", explain Bönig and Frank. In the end, everyone should benefit from the market data and know-how that the young team provide – Progroup, the Professionals Academy and the customers. The market analyses will allow costs to be reduced, new opportunities to be identified and more potential revenue to be raised.

Another advantage of this strategic unit is that, whereas previously lots of different teams have managed their own figures and data independently, creating silo knowledge, the "Market Intelligence" core team is able to collate these figures and data efficiently as a central facility, with a neutral perspective and extensive know-how.

Focus on what matters

In view of the rapid pace of market development, the key question is which events are relevant to the target group and which information is only of marginal value. "With the Market Intelligence division, we can fi ter out the most important information and separate the facts from ction," says Bönig in referring to what the division aspires to do.

A highly capable IT infrastructure is needed to be able to compile these high-quality market analyses. The team currently pays a great deal of attention to the structure and the interaction between the various technical components that are designed to be used for recording and processing data.



The foundation for the "Paper to Market" approach is the vertical cooperation between Progroup and its customers. The interaction and evaluation of relevant market data creates added value that opens up great opportunities for growth for all stakeholders.

Sebastian Bönig, data scientist, prepares detailed market analyses to support JH Holding subsidiaries and their customers in making their strategic decisions.

The aim is to create a platform consisting of multiple systems that prepares the relevant data with as much automation as possible, combines this data and provides the results in a format that is easy to understand. Based on this, users will be able to interpret the data, draw conclusions – and operate more e ciently. Looking to the future, the ambitious unit wants to process data for the entire value chain in the packaging market, but also for all sub-markets that are relevant to the industry. These range from the commodities market and energy market to the capital market and labour market. The objective is always to support dynamic growth.

"I often tell my students that they shouldn't be deceived by the term 'artificial intelligence' – there's nothing artificial about it. AI is created by humans, is designed to replicate human behaviour and ultimately influence human life and society."

Fei-Fei Li, co-founder of the ImageNet project

CHAPTER

MISSION 2

NO FEAR OF THE GIANTS

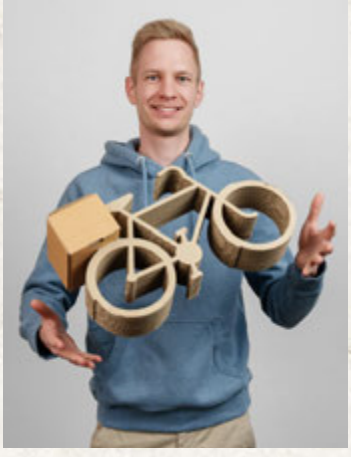
WORKING TOGETHER TO IMPROVE

The management at Josef Schulte GmbH is not so overconfident that it seeks to emulate the big tech companies when it comes to artificial intelligence. However, the cardboard box manufacturer has found a way to utilise the promising opportunities it offers, ranging from solvers to chatbots – and does so by embracing SME networking.

"The AI will fix it" Pascal Pöhler, authorised representative at the cardboard box manufacturer Josef Schulte GmbH, shakes his head when he hears suggestions like these as a way to tackle new challenges. This is because he knows: "Finding a sensible way for us to utilise artificial intelligence is hard work."

The company has been focusing heavily on AI since 2020, especially its applications for SMEs. And it has been participating in a research project together with the Fraunhofer Institute for Mechatronic Systems Design, the Institute for Intelligent Technical Systems and Machine Learning at the University of Paderborn, and the Institute for Decision Analytics at the University of Bielefeld. The participants explored the question of how medium-sized companies in the packaging industry – without an R&D department in this area – can approach the topic of AI and take advantage of the opportunities it offers.

25,000
square metres of production space



Pascal Pöhler, authorised representative at the cardboard box manufacturer Josef Schulte GmbH.

The representatives of Josef Schulte GmbH examined the problem of fluctuating order volumes and the different levels of capacity utilisation that result from this. If there are lots of different orders to process, the primary focus is on set-up times and the related questions of how to manufacture products faster and make maximum use of the available capacities.

On the other hand, if the machines are not operating at full capacity, the focus is on costs and the need to find a better way to combine freight costs. "Creating set-up matrices, optimising them, even with AI and other influencing factors, is no easy task," concluded Pöhler and his colleagues on the project because: "We have a huge number of factors that influence the result in a wide variety of ways."

The demonstrator developed to solve the problem uses the AI approach of preference learning and a solver, i.e. software that uses variables until a predefined target figure is achieved.

AI doesn't just provide benefits when it comes to technical solutions. It also offers a variety of potential uses in language-based applications. Pöhler sees great potential with knowledge management, for example. Lots of employees from the boomer generation have an incredible amount of

Founded in
1965

Josef Schulte GmbH strives to constantly optimise its production speed and capacity utilisation.

know-how that now needs to be made available for the next generation to utilise in a systematic way before these employees retire and their knowledge is lost. “Large Language Models o er a perfect solution. This is a way to make knowledge available for new employees to utilise,” he says with confi ence. Once created, it will also be possible to o er customers a higher level of service. The interface between the user and the digital application is of crucial importance: “The key to using AI successfully in a company is the user interface: It needs to be simple. I think that with the LLMs we’re already in a very, very good place,” he says.

Sharing knowledge and achieving more together

Pascal Pöhler has presented his experiences with AI at the Professionals Academy. One of the reasons why Josef Schulte GmbH really values the institution that is run by Vinzenz Heindl and is currently unique within the industry is its networking concept: It's a platform where people can engage with companies that have similar structures and pass on best-practice approaches – thus adding value for the whole industry.

In addition to the networking, Pascal Pöhler sees another great bene t as being the practical o ers of support from Vinzenz Heindl and his team, for example looking at the market analysis: “We wanted to know where there are still white spots, so which markets aren't yet being served by our current o ers or are only being served to a limited extent. We were delighted to accept the o er from the Professionals Academy to work with us to identify them,” says Pöhler. He can also envisage the working relationship expanding in this direction. “Through the Academy, it’s possible to find spe-ci c ways to utilise the existing network intelligence.” However, to do this the know-how that exists across the whole network needs to be combined. The Professionals Academy provides the appropriate platform for the openness that’s needed – “the demand from the market is clear.”

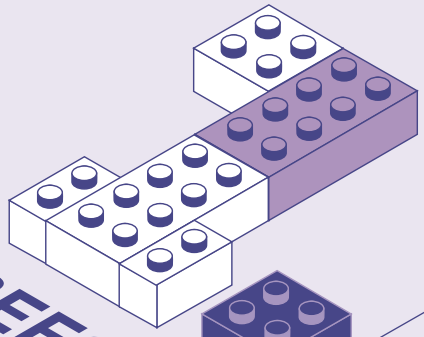
Josef Schulte founded his company in 1965 in a garage in what is now the Paderborn district of Sande. Today, over 25,000 square metres of production space in the neighbouring town of Delbrück, industrial packaging, transport packaging and consignment packaging is manufactured from corrugated board, with the company offering its customers a very wide range of individual cardboard boxes. The business also includes the processing of lots of small orders of between 200 and 500 units. The family company is run by Dietmar Schulte, the son of the company's founder. Josef Schulte GmbH has been one of Progroup’s customers from day one.

TIPS AND TRICKS

THE FIRST STEPS WITH "AI AS A COLLEAGUE" IN MARKETING AND COMMUNICATIONS

Use AI tools to send personalised mail. Recruit and secure customers with chatbots. Write effective prompts and generate unseen images. In the area of marketing and communications, AI now allows you to do a number of things with just a few clicks. It is important to adopt the correct, deliberate approach. Here are a few practical tips and tricks.

Everyone is talking about it and its relevance is on a par with university degrees. More and more HR specialists are now considering knowledge of AI and experience of using appropriate AI tools to be more important than a Bachelor's or Master's degree among applicants. This was the conclusion of a recent study of 800 managers and HR experts by the US platform "Intelligent". So you can't start exploring AI early enough. Progroup already has good experience of di erent applications in the area of marketing. Text and image generators can perform tasks quickly and e ciently if they are supplied with the appropriate prompts.

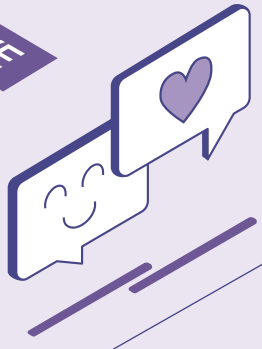


BEFORE YOU START

AI applications can be valuable tools for making internal and external communication and marketing more efficient, more focused on specific target groups and more successful. For beginners, the free versions of the chatbots that are available are generally a very suitable option.

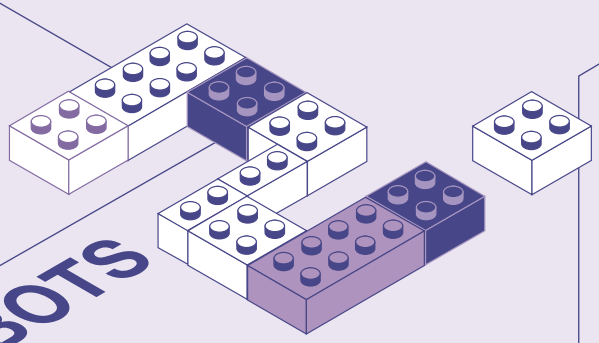
STAY POSITIVE

Poorly worded approaches generate poor responses. ChatGPT, for example, is trained not to respond to or to reject any offensive or discriminatory language. Positive phrases such as "clear road" are better than "road without cars". Important to know: Concise questions produce short answers.



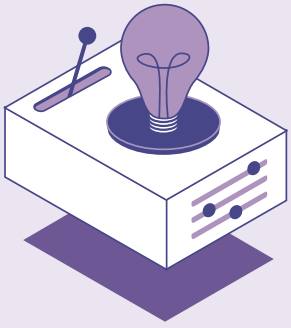
WHAT ARE CHATBOTS?

Chatbots are text-based dialogue systems that enable users to interact with a technical system. They have an area for text input and an area for text output. These inputs and outputs can be made using writing or natural language. Technically, chatbots are more like a full-text search engine than arti cial or even natural intelligence. However, as computing power increases, chatbot systems are able to access increasingly larger datasets at an ever faster rate, thus enabling intelligent dialogues with the user.



CHATBOTS

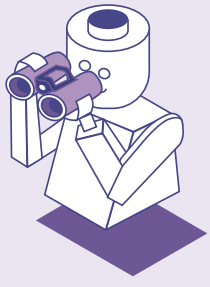
WHAT CAN CHATBOTS BE USED FOR?



Chatbots help with customer retention: Whether it's a brief query about a service contract or arranging a date for maintenance or a repair – the occasions when you have to spend valuable time waiting on the phone to get through to a company are varied and are often a source of irritation for customers. This is where AI can help out: A chatbot will not only pick up the contact details at any time of the day and in any language and pass them on to the relevant CRM systems. It can also ask questions or assess requests. In addition, chatbots offer the option of addressing users in a personalised, human-like way in order to interact with the target group and learn what information is actually being sought. This makes it much easier to recruit and retain customers.

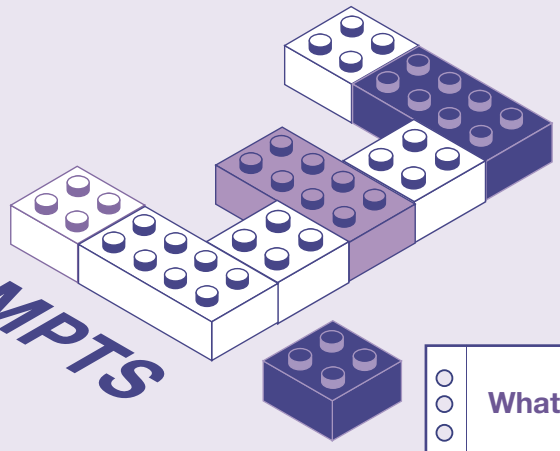
Chatbots make it easier to do research: They are now even suitable for complicated searches for information. They work like a search engine, but attempt to fin out the relevant answers directly. AI language models are usually able to access not just the data that is fed into them, but the Internet as well. The more detailed and precise the questions and prompts, the more accurate the search results will be.

Chatbots optimise PR and marketing campaigns: AI-based analysis tools can be used to track and measure the effectiveness of your own PR or marketing campaigns across different platforms and channels. What's more, AI tools are capable of further adapting and personalising the communication by analysing data that has already been collected. They make it possible to understand the target groups better and address customers in a more precise, efficient and cheaper way. In addition, chatbots can be used internally to optimise communication. For example, to reword posts from employees so that they reflect the company's wording and the community's need for information in equal measure.



Chatbots write texts, translate and transcribe: They can be used to write, edit or summarise emails and texts in a matter of seconds. This is done much faster than humans are able to do it. In next to no time, text generators will provide multiple suggestions for all kinds of texts. In addition, they can automatically create different types of text such as press releases, blog articles and social media posts from existing texts. And translation (example: Deepl) and transcription (example: Firefly) can also be done in a flash

Chatbots monitor the media landscape: Modern chatbots scan and monitor the communication in dedicated online forums and the media in real time. They provide relevant information that can be used to optimise one's own PR and marketing efforts. But they also act as an early-warning system. They mean that any communication crisis, such as a shit storm, can be detected at an early stage and responded to quickly.



PROMPTS

WHAT ARE PROMPTS?

Prompts are at the heart of any interaction with generative AI tools. Large Language Models (LLMs) like ChatGPT from OpenAI are fed with vast quantities of data, are constantly trained on this data and can recognise patterns on this basis. When they detect an assignment, they produce one word after another until a sentence or whole text is produced. Unless they have a precisely worded prompt, LLMs don't know exactly which patterns they should be looking for. This can result in a text that does not reflect the user's expectations in any way.

What information does a chatbot require?

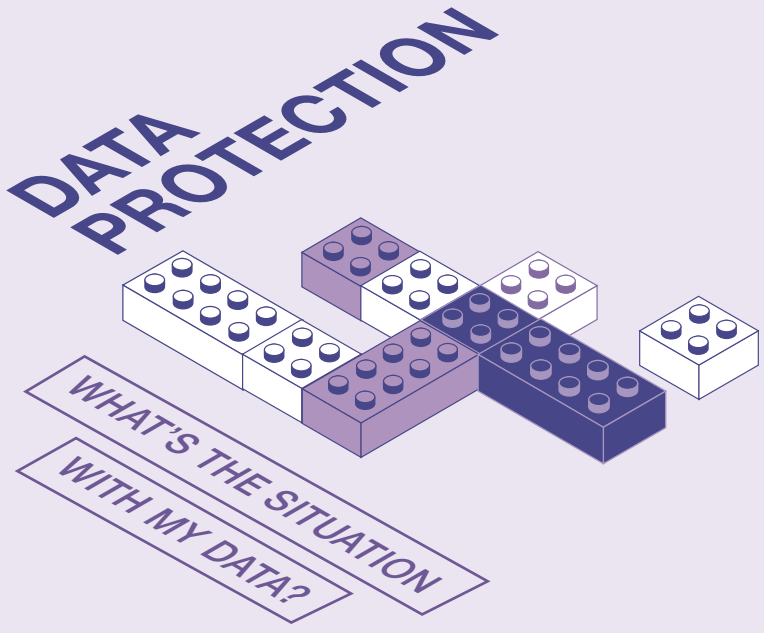
- **Who am I and what task do I need assistance with?**
  Example: Marketing employee who wants to create a Christmas card for customers on the theme of AI.
- **What's my objective?**
  Example: A short greeting to mark the end of the year in six languages
- **What examples or search terms can I enter?**
  Example: Christmas card text from a previous year; core messages and corporate values
- **How long should the text be and who should it be addressed to?**
  Example: 400 characters, customers and employees

HOW DO I WRITE A GOOD PROMPT?

Prompts are generally written step by step. The first question rarely provides the result you want. You get closer to the final result step by step by making the questions more and more precise. The more precise the prompt, the better the text. This also applies to creating images. In both cases, not too many prompts should be used with each entry. In the case of images, it's also vital not to demand too many details and to avoid multiple faces or texts in the image. The AI systems learn from these refined requests and prompts so that the result gets ever closer to your own aspirations.

What information does an image generator require?

- **Which tools do I want to use to create or edit images and what do they cost?**
  Example: ChatGPT, Copilot, Adobe Firefly or Midjourney.
- **What should appear on my image?**
  Example: A robot made from corrugated board that is standing in front of a Christmas tree and is placing gifts underneath it.
- **What should my image look like?**
  Example: Photo, oil painting, comic, sketch, papercut, etc.
- **What look should my image have?**
  Example: Retro, contemporary, futuristic, kitsch, abstract, etc.



In December 2023, the EU passed the first AI regulation anywhere in the world, the AI Act. The following general rule applies: Confidential data should not be shared via ChatGPT or other AI tools.

Don'ts

- Don't provide the AI with any confidential data such as customer lists, price calculations or sales concepts.
- Don't provide the AI with any personal data such as names, addresses, phone numbers or contact details.
- Don't trust the AI results without checking them first

How to use generative AI successfully
IN 5 STEPS

1. **Is generative AI the right choice for my company?**
   Analyse and understand your individual needs and requirements.
2. **Which tool makes sense for my company?**
   Define specific goals, e.g. accelerating content creation.
3. **How does prompting work?**
   Use precise wording, provide context, specify format, try it out :)
4. **How can I support my employees?**
   Offer training formats
5. **Were we successful?**
   Record KPIs, e.g. engagement rate, processing times, open support requests

Dos

- Utilise AI as a creative tool for brainstorming.
- Check facts before an AI-generated result is published.

“START TODAY, DON’T WAIT!”

otto group

The Otto Group is a Hamburg-based, family-owned company with a history stretching back 75 years. Today the Group has almost 40,000 employees, making it the largest online retailer with European roots.

PIONEER FOR DIGITAL INNOVATIONS

In an exclusive interview, Anja Körber, Head of Artificial Intelligence & Automation, describes the Otto Group's AI strategy and the approach taken to developing the AI assistant ogGPT (otto group Generative Pre-Trained Transformer).

Ms Körber, you’re responsible for the development of AI solutions at the Otto Group. What do you find so fascinating about this topic?

Anja Körber: AI has the potential to transform all areas of our lives. That's what makes it so interesting and challenging for me. I work with my team to develop AI-based software solutions that are state-of-the-art, are easy for users to work with and are economically relevant for the company.

Why did you choose the Otto Group? After all, you'd be able to delve far deeper into the subject matter by working at the major software groups.

For me, the Otto Group has always been a pioneer for technological innovations and I particularly like the values at the family-owned company. They very closely reflect my own values, including adopting a responsible approach to technology.

What values are these specifically

First of all, sustainability. This is championed by the family that owns the company and is reflected in the product range and the way we do business. For example, we take particular care to ensure that fair working conditions exist all along the supply chain – and we've always done this.

And what else?

The respectful and open approach we adopt with each other. If anyone has an issue, they can talk about it with anyone at any time, including the top decision-makers. In addition, we as employees can also always put forward our own ideas. What dictates whether ideas are put into practice is that they must add value for customers and/or employees and the company. The goal is always to make the Otto Group successful.

As Head of Artificial Intelligenc and Automation, Anja Körber is responsible for the development of the AI assistant ogGPT.

AI and automation are essential tools for doing this. Which issues have been particularly important for the Otto Group?

First, the fact that we embarked on machine learning at a very early stage, for example, and structured data also forms the basis for using AI. Another important milestone was the launch of ogGPT. The original idea was to make it easy to access Group policies right across the company. In looking for a good solution, a Large Language Model then proved to be a key component. The result today is a powerful internal AI assistant that all Otto Group employees can utilise and is constantly being expanded.

How do you feed this AI assistant?

The important thing to understand is that we don’t train any AI models, but instead use Microsoft Azure Open AI, which is an existing model that is hosted in the EU and meets our privacy guidelines. Our content and data are only processed when they’re retrieved,

and we do this with a combination of Retrieval Augmented Generation (RAG) technology. This also ensures that only the latest content is used. It also has the advantage that we can control what happens in ogGPT at all times, and the system always provides the most valid answers.

Does this mean you avoid any hallucinations from the model?

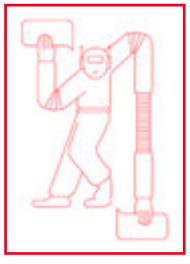
If the content is updated regularly and entered correctly, then yes. We provide an extensive training programme to make sure this is the case. It enables employees to use ogGPT correctly, but also to recognise the limits of the AI assistant. In addition, with each answer we point out that the output should be checked to make sure it is plausible and correct. We do this, for example, by indicating the source from which the information in the answer originates. The user needs to understand that AI is not all-powerful and AI-generated answers are only suggestions that should be verified and edited. We adopt the "human in the loop principle".

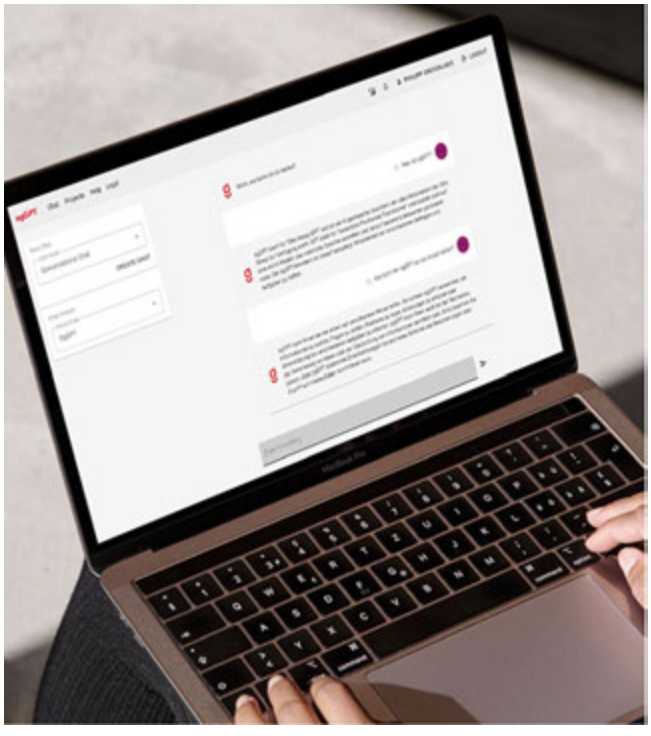
How was the assistant developed?

The basic development of ogGPT was an iterative process that took around two months. The individual components of ogGPT were created through various projects, proof of concepts and hackathons that we developed and refined over time. When we got the "go-ahead" for the rollout across the Group, the biggest challenge was using these components to build a scalable and reliable solution that can be used by all colleagues. This required us to carry out extensive tests and optimisations to ensure that the system performs under real conditions and is stable and secure.

What further expansion phases for ogGPT are you planning?

There are unlimited options for expanding ogGPT. For example, we want to integrate features that will enable the user to speak to the AI assistant. This is very important for improving accessibility, for example.





Rapid support across all devices: ogGPT commands great trust from the Otto Group's employees and is used a great deal.

"AI has the potential to transform all areas of our lives. That's what makes it so interesting and challenging for me."

Anja Körber

You rolled out ogGPT in record time. What was the secret to this?

We brought together all departments and worked out the solution together by adopting an interdisciplinary approach. The initial questions were always: "What's possible?" and "What can we do?". In the project, we divided the whole development process into small steps and then implemented it. So step 1: "Only operate with your own content", step 2: "Share content with colleagues", and so on – a classic agile approach.

What advice would you give to small and medium-sized enterprises that are just getting started with AI?

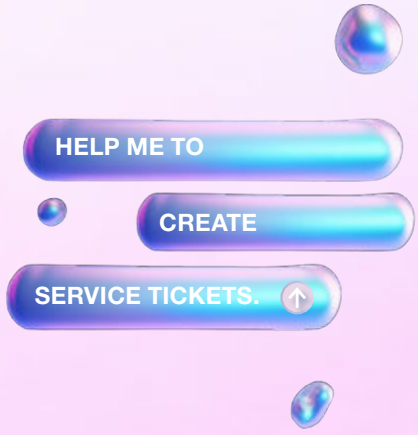
Start today, don't wait. Consider which application you want to start with. Set yourself small goals and move forward step by step. Bring together all the departments right from the outset as this will increase the level of acceptance and chances of success. I don't agree with the frequently cited objection that the solutions and models aren't yet fully developed, so it's still too early to jump on board. The capabilities of the AI assistants are certain to develop at a rapid pace, but the skills that users will need to work with these solutions and models can definitely be built up as real skills right now. This is knowledge that everyone is going to need in the future.

ASK THE AI A QUESTION

COLLEAGUES ASK QUESTIONS, THE CHATBOT ANSWERS

Which standards govern our production? What further training is suitable for me? How do I change my IT password? Employees ask themselves lots of questions every single day and they often don't get the correct answer or don't get an answer at all. Progroup experts from the "Prosystems" department are working to enable all employees to make use of generative AI in the future. Thomas Harmann, Enterprise architect and AI expert, describes the work that the team will be doing.

When Thomas Harmann talks about his current project, he always describes the objective by quoting a plausible example: "Imagine you had a personal assistant who could perform annoying routine tasks for you. Whether you work in production, marketing, sales or the personnel department, your assistant will always be by your side. It will help you with any IT problems, find the right document templates and know the answer to any question within the Progroup universe. What's special about it is that this assistant is not a esh-and-blood colleague, but arti cial intelligence (AI)." This is the very scenario for which he and his team at Progroup are developing a special chatbot. A number of technical solutions are currently being evaluated. One of them is Microsoft Copilot, a modi- ed version of the Large Language Model (LLM) that GPT-4 also uses.



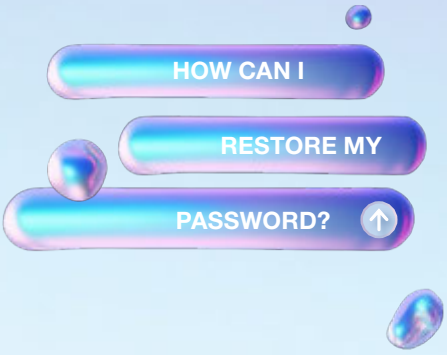
The technology is trained to generate texts that very closely resemble texts produced by humans. What's important for it to be used at Progroup is the certainty that the chatbot does not collect any user or system data or transmit it to Microsoft's servers. This means that no company information is disclosed externally.

Helping people to help themselves

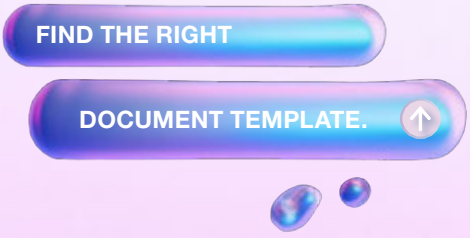
Thomas Harmann sums up the requirements for the "Ask the AI a question" project: "There's this famous use case that occurs in any company. The employees would love to have a virtual assistant that knows everything there is to know about the company and can make this knowledge easily accessible." To make this happen at Progroup, all the knowledge from the company's 32-year history would fir t need to be pooled, si ed through and in some cases even digitised. That's a huge task."

This is why as a fir t step the chatbot is being developed for the IT Service Desk. It receives lots of routine requests every single day. How can I create a Teams team? How can I create or edit shared mailboxes or

How can I help you today?



distribution lists? Where do I get keyboards, cables, adapters or similar accessories from? Or, how can I restore my password? These are just a few examples of requests that should be answered by the arti cial intelligence in future. “This will save time and resources and allow colleagues to focus on more creative and more strategic assignments,” says Harmann.



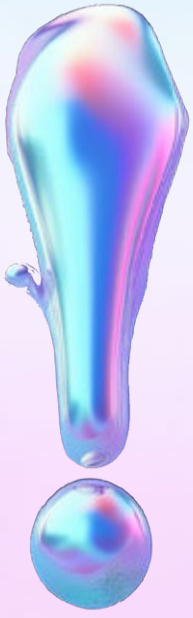
The chatbot can also help to create service tickets. Employees will no longer need to fill out elds on forms because the AI can pre-prepare the ticket using automated questions and answers. This will reduce the workload for the Service Desk and make the process more e cient. “Progroup is growing dynamically. As each new employee joins, the number of requests increases,” explains Harmann. “The AI will enable these tasks to be processed faster in future.”

Company knowledge at a click

A test phase of four months has been set aside for the pilot project. If the technology proves its worth, the chatbot will gradually be used for other tasks as well. The next thing to do is to build up a knowledge database. The challenge here is that at Progroup – as is the case in almost all companies – the expertise lies predominantly in the individual divisions. Each division will then be asked to identify the relevant documents from the last three decades and feed them into the chatbot. However, the employees’ knowledge won’t just need to be integrated once, but will need to be updated constantly. But how will new knowledge be added to this database? How will we integrate knowledge from processes that aren’t written down? These questions still need to be resolved by the innovation team led by Thomas Harmann. From a strategic point of view, for Progroup it’s not just about making processes more e cient. It’s primarily about making sure its employees can work in a exible, modern way.

Getting employees on board

To make the transition to using AI as smooth as possible, Progroup will provide employees with expert support. As well as gaining the technical skills, they’ll also be given the assurance that they themselves are part of this new, digital future. “We view this as an essential part of the whole process to overcome any reservations,” stresses Harmann. “The employees will understand that AI is a tool that will help them with their daily work.” The AI-based assistant is an example of how digitisation is transforming the world of work. Despite the challenges, this development provides huge opportunities for the future of work.



The road to getting there may present a number of obstacles to overcome. But with the right planning and a willingness to listen to the needs of employees, Progroup will deliver this change successfully. The future of work at Progroup looks very bright – and has only just begun.

"We're at a crossroads – a moment at which our technologies are outpacing our ability to understand them. How will AI change what it means to be a human, to live in a family, to communicate with one another?"

Sherry Turkle, sociologist and professor at MIT

CHAPTER

3 EMOTION

WE NEED CLOSE COOPERATIONS

AI CAN BE A GAME CHANGER – BUT IT CAN'T REPLACE OUR ABILITY TO THINK FOR OURSELVES.

The rapid advance of artificial intelligence p ovides huge opportunities for family-run packaging companies. With the Professionals Academy, Managing Director Vinzenz Heindl has created a platform for discussing a variety of issues not just concerning AI and for highlighting potential applications of interest. He advocates for close, trust-based cooperation between medium-sized family companies in the packaging industry so they can shape the market together. He is convinced that AI presents huge potential for the industry and the people that shape it.

Mr Heindl, the key topic at this year's Professionals Academy Congress in October is arti cial intelligence (AI). What prompted you to choose this topic speci cally?

Vinzenz Heindl: This topic isn't new in the industry. To be e ective, AI requires large volumes of data that it can learn from. A very large amount of data is already generated, processed and analysed in most companies today. The discourse surrounding AI has been very much fuelled by the rapid development of Large Language Models. The increasing use of AI creates very speci c challenges. How do family-run companies handle the processes of assessing, deciding on and implementing arti cial intelligence? How can trust in AI be established and what requirements result from this? We need to support our employees in using these new tools. That's why we're dedicating this year's PAC to this topic.

You say that AI isn't new in the industry. What new opportunities do you think the latest surge in development will create?

Generative AI will enable even non-programmers to exploit all the possibilities that AI o ers. You can access all the knowledge amassed on the Internet in a matter of seconds, you can visualise ideas and write and test application programs, to list just a few of the possibilities. For instance, in future it might be possible to use AI to develop innovative and customised packaging solutions. To do this, you would, for example, need to enter images of the product and other information about the product, the transport routes and the transport conditions into the system and the AI will then come up with the perfect product.

That all sounds very appealing, but do you actually need AI applications

to do this? Couldn't standard algorithms also be used to solve this problem?

It's certainly possible to integrate these requirements into algorithms and develop a program or so ware from them. But this would be a very laborious process and would usually produce predictable results. By contrast, AI solutions are capable of processing vast amounts of data, learning from them and producing the best solution iteratively. They can come up with new, non-predictable approaches that give companies a real innovative edge. The most important basis for this is data – as much data as possible with as much validity as possible.

Large corporations have a clear advantage over family-run companies here.

To some extent this is true because the bigger the corporate structure, the more data is available. However, it's not just about the volume of data, but the quality of this data too. At the same time, this gives us a great opportunity: close cooperation not only allows us to buck this trend – the knowledge of a large number of medium-sized enterprises is broader and in some areas also deeper than that of large corporations. Ideally, this cooperation will extend beyond network intelligence, so exchanging ideas and best practices. What's required is the exchange of speci c data that could be managed by a custodian so that each partner can see that their data is guaranteed to be secure. The evaluation logic, based on AI systems, would be provided by us. The findings that are obtained could then bene t the whole community and enhance the market position of all stakeholders over the long term.

How do you assess the level of willingness to take this step?

We'll address this issue at our congress and make it clear that in our view this cooperation is a necessary step. The most important foundation for this is already in place: Trust and the understanding that we can only shape the market by working together. That's why this is now the right time to broach this topic and secure our long-term future by entering into strong cooperations. In nature, one would refer to this as swarm intelligence – the individual utilises the strength and intelligence of the group. We're going one step further: We're not just incorporating people's empirical knowledge, but also incorporating the digital knowledge from the data.

"AI offers us huge opportunities and can be a game changer for us."

Vinzenz Heindl

What opportunities will emerge from this?

Smaller companies are very close to the market, interact closely with their customers, understand their challenges and needs, and in most cases have a personal connection with them. This means they're also able to develop intelligent packaging solutions that perfectly meet their customers' requirements. If we pool this knowledge, then the quantity and quality of the data is signi cantly higher than that of large corporations. This will then enable AI systems to learn faster and achieve focused results. So AI o ers us huge opportunities and can be an important game changer.

What role will the Professionals Academy play?

The fir t thing to do is to raise awareness of this topic among all stakeholders, for example as part of the congress. We'll prepare the expert knowledge in such a way that it's easy for everyone to understand and derive speci c implications for action from this. We won't just limit ourselves to the technical aspects. Our goal is to help customers get their business AI-ready in all relevant areas. It's also all about the questions of how to structure the data intelligently, how to integrate the topic into the organisation, how to overcome resistance and resentment, what role an owner or business-owning family can play, and what technical but also emotional skills we need.

What should the role of business-owning families be?

In family-run businesses, it is common for there to be a clear commitment from the management to introduce new technologies successfully into the organisation. The management defin s the framework conditions, responsibilities, assigns decision-making powers and o ers speci c support

to employees. The goal should be to establish a genuine interdisciplinary innovation community with a wide range of di erent quali cations for the company.

What are these quali cations?

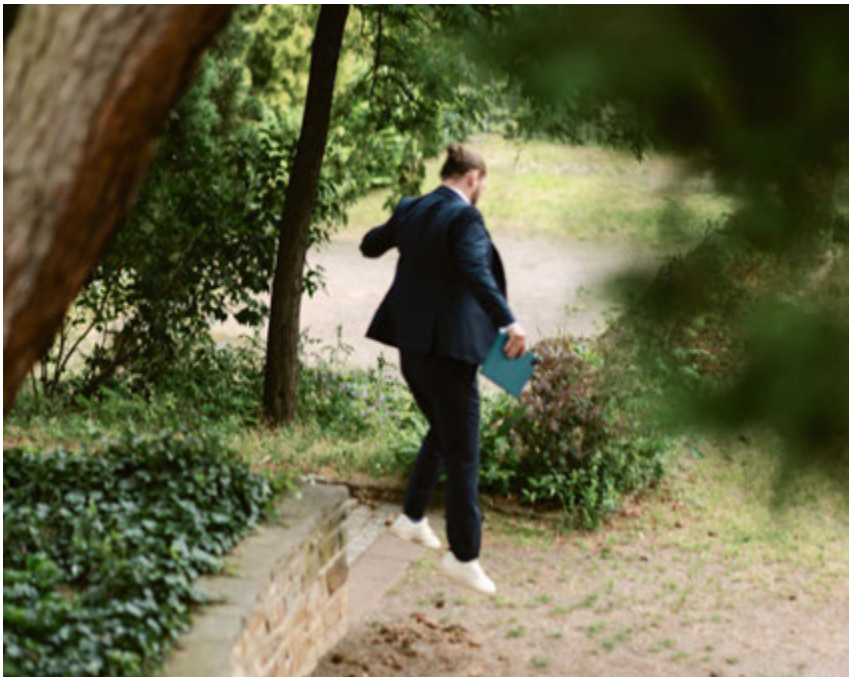
First of all, it's important to state that AI can't and mustn't replace our ability to think for ourselves. That's why the technical experts within the company still have a crucial role to play. They can assess and interpret the results from the AI. They can work out an impact assessment for the company. And they can answer the questions that AI can't answer.

In addition to technical skills, when working together with AI-based systems, in future communication and problem-solving skills, creativity and re ective capabilities will become increasingly important for reacting spontaneously to any issues that crop up. Working with AI systems will extend beyond simple development and everyday use at work. Rather, we will become trainers of the AI because – unlike conventional technologies – it evolves constantly through interaction with its users.

Managers will need to ensure that the technical and interpersonal communication works, that the team dynamic is right and that the cooperation between the high-potential teams runs smoothly with a focus on the ultimate objective.

That's a real challenge.

Correct, and it's a complex one. First, you need to make sure that AI is integrated not just in a technical way, but also in a way that makes strategic sense. This means there must be clear goals and a long-term vision for how AI can help the business progress. In addition, we need to prepare our employees for this change because AI will alter existing work processes. This will require speci c training to create acceptance and the necessary know-how. Data quality and data protection are fundamental components that we need to focus on as AI can't function without high-quality data and at the same time the level of trust of our customers and partners must not be weakened. These challenges must be overcome in order to actively shape this transformation.



Exploring new horizons: If medium-sized packaging companies start the process of transformation now, this will give them the best chance to improve their position in the market.

> "AI can't and mustn't replace our ability to think for ourselves."
>
> **Vinzenz Heindl**

Transformation is a good word to focus on. How will the packaging industry change over the next few years?

If we compare the packaging industry to other market segments such as the automotive sector or mechanical engineering, we can see that there's huge potential for us to exploit simply through consistent digitisation. One example is recording machine data. This data is frequently still recorded using handwritten notes and Excel lists. This means we fir t need to adopt digitisation consistently so we can create the foundations for using AI. This will then give us the best chance of continuing to improve our position in the market. What's important is that we start this process of transformation together now.

THE FUTURE MAKERS

Innovations are part of Progroup's DNA. That's why the latest technologies and artificial intelligence are so important. Three Progroup employees give an insight into their exciting projects that they're using to pave the way to the future.

Claudia Metzger

The business administrator and process manager on …

… the reasons why she enjoys working at Progroup

Before I joined Progroup in 2018, I worked for listed US corporations where you were dependent on the trends in the stock market. By contrast, at Progroup we pursue a long-term, sustainable strategy. I'm also impressed by the company's integrated approach. Everyone focuses on the ultimate objective, the big picture. And third, I really admire the aspiration to constantly strive for innovations.

… the possible ways that AI could be used in her area of responsibility

In the area of administration, there are still plenty of processes that tie up lots of resources and take a great deal of time. My role involves scrutinising how we can achieve results even more efficiently here. I see an opportunity for us to focus more on content that adds value by embracing modern IT, such as AI or intelligent question-and-answer systems, commonly known as "bots".

… her challenges for the future

Hybrid work models have changed the way we collaborate. People used to move spontaneously between desks, chat in the coffee corner or arrange to meet for lunch to find out what colleagues were thinking and the challenges that processes of change would bring for them. Different strategies are needed to do this today. We need to find new tools to continue to support colleagues. In addition, I'd like to further improve my skills so I can support processes of change in my role in a meaningful way.

The Optimiser

The pioneer

Christophe Haessig

The mechanical engineer and innovation manager on …

… the reasons why he's enjoyed working at Progroup since 1993
I started off as a reel driver. There was a real sense of euphoria back then. Although the assignments have changed, the freedom to embrace innovations has remained. That's why I've never got bored in more than three decades at Progroup and have never been tempted to look for another job.

… his role as innovation manager
I've held this position since 2021. To champion innovations, you need to have knowledge from all areas of Progroup. The Innovation Communities have enabled us to create an effective network that allows people to engage right across the group. As innovation manager, I evaluate the ideas, ascertain if they're feasible and economically viable, and set priorities.

… an innovation that he's particularly proud of
The Next Generation Products. The profiles of the corrugating rollers, the heart of the corrugator machine, have been designed to ensure that we can process light and ultra-light papers in the best way possible. The advantage of this is that we achieve the same level of strength with less raw material.

… the challenges in innovation management
Recognising and identifying the offers that are relevant to Progroup from the many options available in the market is a big challenge. My focus is on ensuring that Progroup's position as a technology leader is safeguarded. AI will play a vital role in this process.

The powerman

Raphael Smandzich

The industrial engineer and head of the Competence Center Energy on …

… the reasons why he chose to work for Progroup
I've been working at Progroup's first waste-to-energy plant i Eisenhüttenstadt since March 2022. I'm impressed by the dynamism and growth at this family-run company. I like the variety and complexity of my assignments involving the conservation of resources in the energy sector. They range from aspects of the decarbonisation strategy to the substitute-fuel power plants that we build and operate.

… the projects he's currently working on
My main task at the moment is working with the Board and Strategy Office to develop an energy strategy. Progroup has set itself ambitiou targets: we want to be carbon-neutral by 2045. We're working with a team of additional experts to analyse possible things we can do to make this happen. I'm also working on the "Factory of the Future" project and I'm a scout on the Progroup Innovation Board – all of this work is under the aspect of "energy".

… the potential that AI offers in the energy sector
Artificial intelligence can help us to optimise our energy plants and prepare for decisions on where to make investments. When it comes to preparing business strategies, impacts like the electricity price trend and other data can be utilised and evaluated virtually in real time.

… working on the Innovation Board
I joined the Innovation Communities in December 2022. The opportunity to chat with people from across different divisions expands your horizon. Engaging with colleagues gives you a different perspective and prompts you to delve deeper into a subject.

PROGROUP ASKS QUESTIONS – GIRLS ANSWER

Despite getting good grades and a variety of different potential, there are still not enough young women choosing STEM professions. That's why Progroup gets involved in the Germany-wide "Girls' Day" initiative. We asked the participants what aspirations and goals they have for their future career. This is because persuasive arguments and a wide range of different information offers are needed to recruit girls to become the next generation of skilled workers.

What do you want from your future job?

IMPORTANT

I'd like to educate myself further on a regular basis and be encouraged to develop my strengths.

I'd like to have flexible working hours

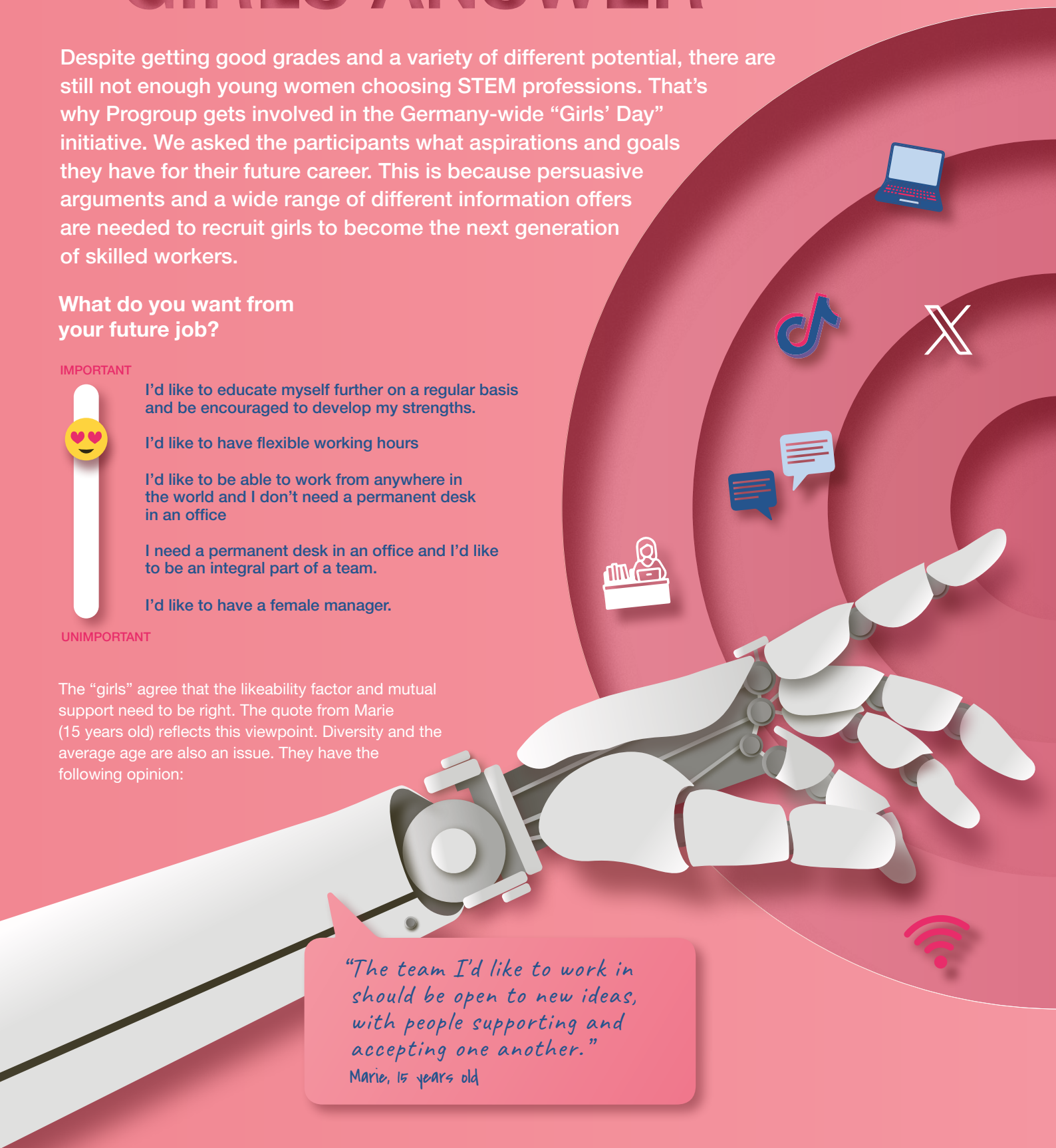
I'd like to be able to work from anywhere in the world and I don't need a permanent desk in an office

I need a permanent desk in an office and I'd like to be an integral part of a team.

I'd like to have a female manager.

UNIMPORTANT

The "girls" agree that the likeability factor and mutual support need to be right. The quote from Marie (15 years old) reflects this viewpoint. Diversity and the average age are also an issue. They have the following opinion:

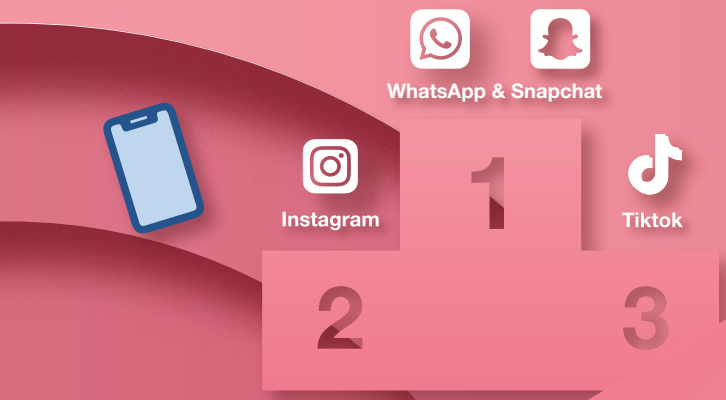


"The team I'd like to work in should be open to new ideas, with people supporting and accepting one another."

Marie, 15 years old

Messaging services like WhatsApp and Snapchat are the digital channel of choice. Generation Alpha has moved on from Facebook and X (formerly Twitter). The girls surveyed use Office programs and e-mail providers primarily in an educational context.

What's your digital medium of choice?



Can you imagine taking up a technical profession?

- ☑ *Yes, because I enjoy programming and I'd like to learn how to get better at it.*
  Kim, 14 years old
- ☒ No, because I can't really imagine myself doing that.
  Livia, 11 years old
- ☑ *I'm very good at computer science and I've also got good technical skills, so I can definitely imagine myself doing that.*
  Nesrin, 15 years old

It's essential to develop initiatives to recruit the next generation of female talent that meet the girls' expectations for their future and show them: "Hey, I enjoy that and I can do it."

I find artificial intelligence exciting because .

… *it helps me when I can't do something myself.*
Mila, 12 years old

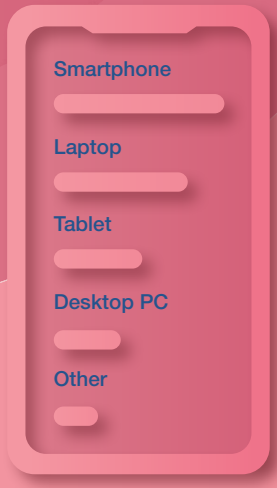
I find the topic unsettling because

… it's a new topic and I don't really know much about it.
Adina, 13 years old

Have you had any experience of using AI tools? And if you have, in what context?

- ☹ *No and I'm not interested in this either.*
  Zoe, 15 years old
- 😊 Yes, I use ChatGPT for presentations.
  Ophelia, 13 years old
- 😐 No, but I'd really like to learn more.
  Tamina, 12 years old
- 😐 *Not regularly, but I have given ChatGPT a try.*
  Karla, 11 years old

Which devices do you use?



The girls and young women are generally open to and interested in learning more about artificial intelligence. But they also express some uncertain y because they can't yet really grasp the topic. This is where schools, politicians and companies need to provide information programmes and course units that provide the appropriate perspective.

Outlook For 2025

In the next edition of PROfil magazine, we'll be focusing on the topic of "power". This is the energy that helps us to overcome challenges and be successful. We'll be reporting on the creativity of clever minds and the creative power of business leaders, the drive that is needed to implement major projects, and the innovative strength that will shape our future. Discover how we work with our customers and employees to unleash top talent and be inspired by the combined strength that spurs us all on.

You'll be able to read more in autumn 2025.

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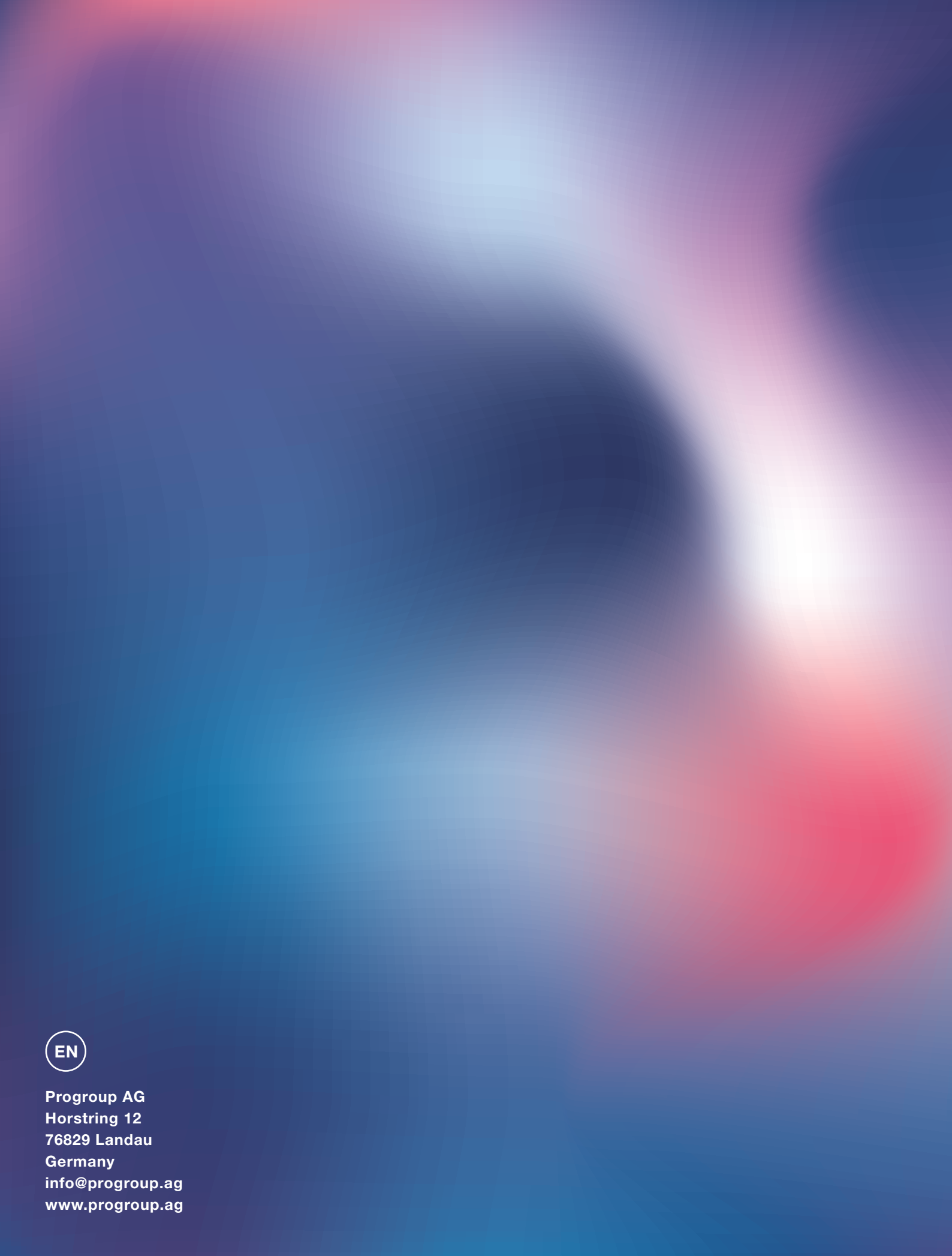
To make the text easier to read, the male form will be used for personal designations and nouns relating to people. Corresponding terms fundamentally imply equal treatment for all genders. The shortened linguistic form is for editorial reasons and does not imply any prejudice.



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