

Making
Visions
Move

At home in **50**  countries

Active in **100**  countries

> **14,000**  employees worldwide

1,451.8  revenue in € million

In brief

As a recognised technology service provider, we are the global byword for security and trust, neutrality and quality. At the same time, we have the digital future firmly in mind. Independent engineers and IT security professionals offer excellent solutions for safety, security and quality and an outstanding competitive position. At home in 50 countries and active in over 100, our workforce of more than 14,000 employees supports companies in the exercise of their responsibility for people, technology and the environment. We have accompanied every industrial revolution and participated in the development of globally recognised safety standards – and we are now also laying our part in making the world safe and secure in the digitally networked age.

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KNOWLEDGE



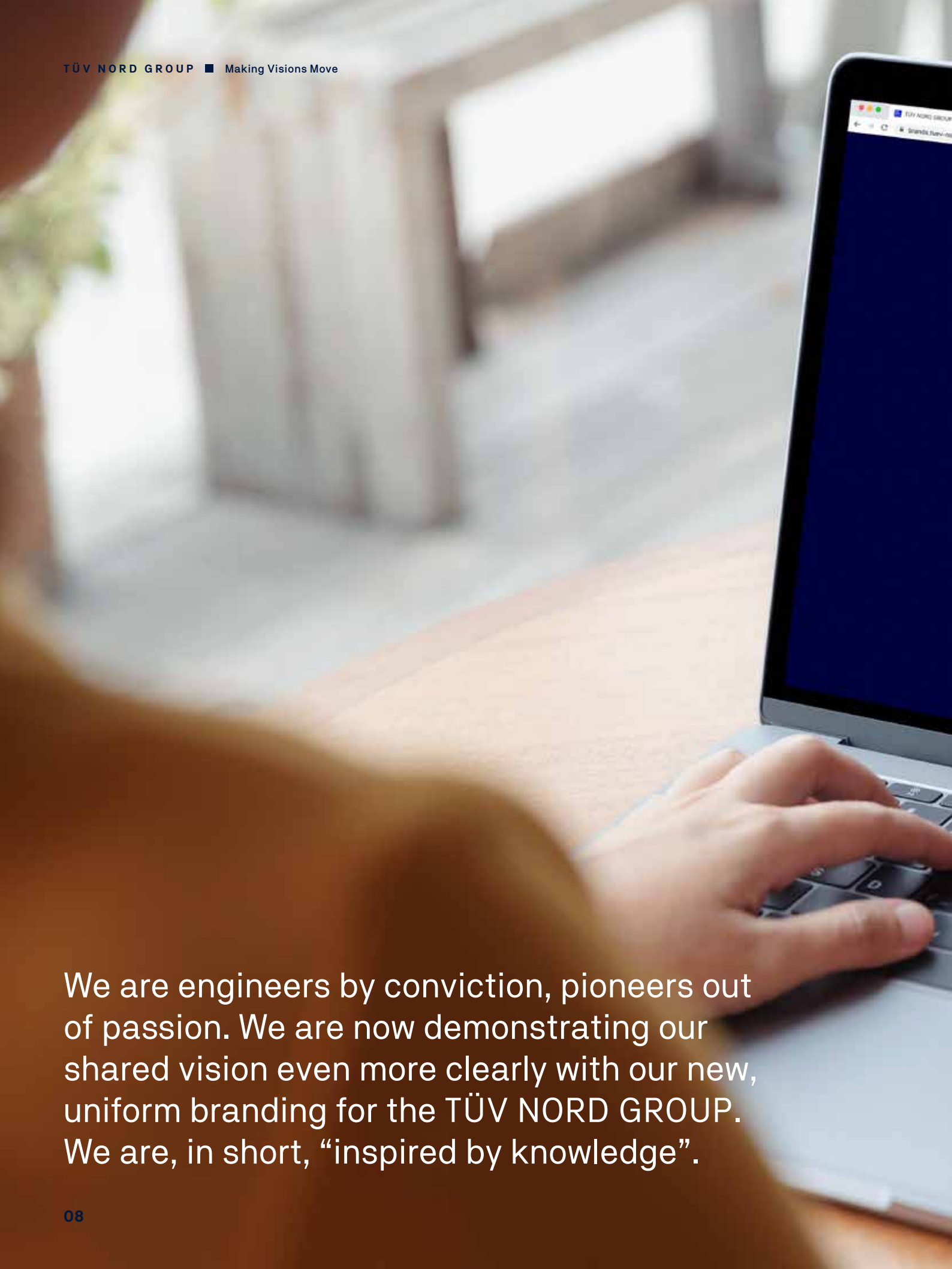
Diverse teams and trust-based cooperation:
Driven by enthusiasm for innovation and
progress, we develop new visions for sustain-
able solutions.



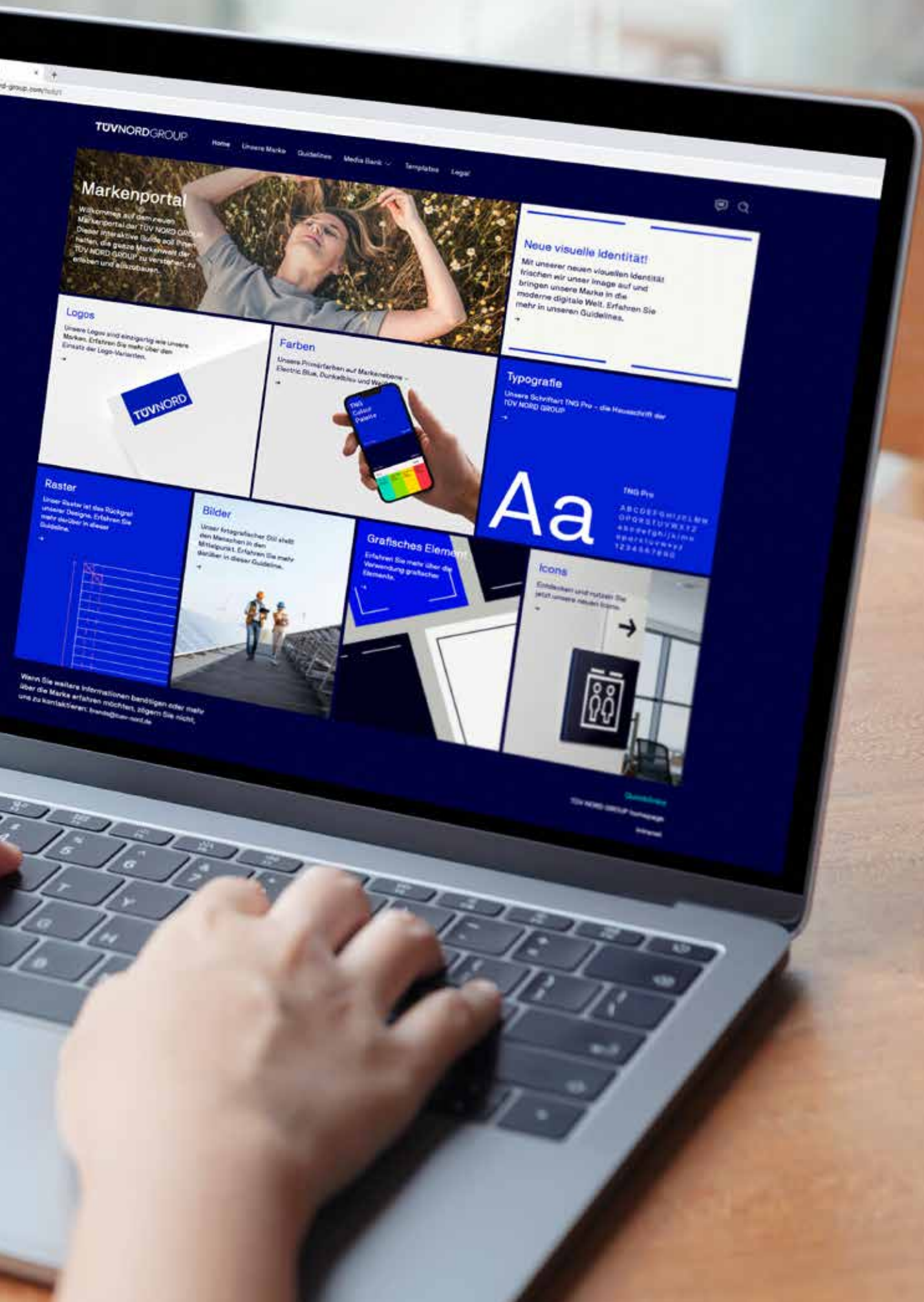
A person's hand is pointing at a whiteboard covered in technical sketches and diagrams. The sketches include various geometric shapes, lines, and what appears to be a small diagram of a mechanical part. The background is a blurred office or meeting room with a window showing a grid of lights.

Highly motivated, open and goal-oriented, we implement ideas in tandem with our customers. To this end, we pool our deep reserves of technical knowledge – advancing the welfare of society in the process.



A close-up, shallow depth-of-field photograph of a person's hands typing on a laptop keyboard. The laptop is silver and positioned on a wooden desk. The background is a blurred office environment with a window and a plant. The text is overlaid on the bottom left of the image.

We are engineers by conviction, pioneers out of passion. We are now demonstrating our shared vision even more clearly with our new, uniform branding for the TÜV NORD GROUP. We are, in short, “inspired by knowledge”.



Markenportal

Willkommen auf dem neuen Markenportal der TÜV NORD GROUP. Dieser interaktive Guide soll Ihnen helfen, die gesamte Markenwelt der TÜV NORD GROUP zu verstehen, zu erleben und auszubauen.

Neue visuelle Identität!

Mit unserer neuen visuellen Identität frischen wir unser Image auf und bringen unsere Marke in die moderne digitale Welt. Erfahren Sie mehr in unseren Guidelines.

Logos

Unsere Logos sind einzigartig wie unsere Marken. Erfahren Sie mehr über den Einsatz der Logo-Varianten.



Farben

Unsere Primärfarben auf Markennote: Electric Blue, Dunkelblau und Weiß.



Typografie

Unsere Schriftart TNG Pro - die Hauschrift der TÜV NORD GROUP

Aa

TNG Pro
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
0123456789

Raster

Unser Raster ist das Rückgrat unserer Designs. Erfahren Sie mehr darüber in dieser Guidelines.



Bilder

Unser fotografischer Stil stellt den Menschen in den Mittelpunkt. Erfahren Sie mehr darüber in dieser Guidelines.



Grafisches Element

Erfahren Sie mehr über die Verwendung grafischer Elemente.



Icons

Entwickeln und nutzen Sie jetzt unsere neuen Icons.



Wenn Sie weitere Informationen benötigen oder mehr über die Marke erfahren möchten, zögern Sie nicht, uns zu kontaktieren: brand@tuv-nord.de



It's been happening for a long time on the smallest of small scales: In Miniatur Wunderland Hamburg, the world's largest model railway, lorries and trains bring their goods safely to their destination day after day – without any “people” in their cabs.

“Step by step”

Lorries and trains that transport goods autonomously without needing people to drive or load them are a nice idea, to be sure – but how close is this vision of self-driving road and rail freight transport to becoming reality? TÜV NORD has expertise in both fields: Katrin Leicht, Project Manager for Autonomous Driving Automotive, and Dr. Hans Vallée, railway expert, talk in this interview about potentials and problems from the point of view of an expert organisation that is working with the parties involved to make this aspiration real.

Ms. Leicht, Dr. Vallée, what role does autonomous driving play in road and rail freight transport?

Dr. Hans Vallée As far as the railways are concerned, trains will not be running autonomously any time soon. There's no doubt that this would be possible in technical terms. But it isn't compatible with the operating procedures of rail transport on mainline routes.

What does that mean?

HV Autonomous means that a vehicle independently looks for its own route. To put it in simple terms, it finds its way wherever there's space, for example by switching to a trunk road if there's a traffic jam on the motorway. But that won't work with the railways. Rail transport is organised centrally: Trains run according to timetables, they can't simply switch to another route; after all, the rail network isn't that large in most countries. This means that self-driving trains are only really conceivable in self-contained places. These would include depots or marshalling yards, when the task at hand is to sort wagons autonomously – and this is going to be possible with the help of the digital automatic coupling system (DAC), which Deutsche Bahn is soon going to be switching over to for freight transport operations.

Ms. Leicht, what's the situation with self-driving freight transport by road?

Katrin Leicht When it comes to distinguishing between autonomous and automated traffic on the road, we follow the SAE autonomy levels.

“My impression is that having a person in the driver’s cab is going to be unbeatable in terms of efficiency for the time being.”

Dr. Hans Vallée, TÜV NORD Systems



A level 5 vehicle would be completely autonomous; in this case, the system would take over all the driving tasks. In practice, however, this level is going to be a pipe dream for the foreseeable future, even in freight transport, because it would mean that a cargo vehicle would have to find its way on any terrain, in all traffic scenarios and under all possible environmental conditions. And this is where the technology bumps up against its limits, at least at the moment.

Which SAE level are we already seeing in practical use today?

KL Level 4 – here, the system must be able to cope without a driver in a previously defined area. We at TÜV NORD run a two-stage check to establish whether the vehicle has the properties it would need for Level 4 automation and whether it can actually move independently along its envisaged route.

There are still technical challenges, especially at the heart of the autonomous systems, which need to be able to correctly identify relevant objects and situations in the environment and react appropriately to them. Here’s an example from our tests: A large dandelion growing on the side of the road may be detected by the system as a potential obstacle, causing the vehicle to stop. Not only that, but the network coverage with both GPS and the 5G mobile communications standard is far from ideal. But reliable localisation accuracy across the board would be required.

What potential freight transport applications do you see for road or rail vehicles that are fully automated or might one day even be autonomous?

KL One area with potential is platooning, by which I mean driving several connected vehicles together at short intervals. But there are still a lot of questions to answer here too.



HV Platooning opens up the possibility for logistics companies to reserve certain time corridors on fixed routes. For example, a convoy of trucks with a lead vehicle and automated follow-up vehicles might drive from Hamburg to Berlin at a fixed time every Thursday night.

So, there would be a timetable for these lorry trains, like you get on the railway?

HV Exactly. And you can already see on some motorways that the first overhead lines are being built for long-distance transport, which will allow large lorries to travel on electrical power alone. Here, too, the principle is similar to that of rail transport: The lorries are manoeuvred into place at the beginning of their motorway journey, and the only route they can possibly take is to follow the overhead power lines. When you look at these ideas, however, the question arises as to what motorway lanes will end up looking like if convoys of heavy lorries stick rigidly to them for years on end.

Would fully automated freight transport actually be that efficient?

HV As far as trains are concerned, that's a fair question. Trains are a means of mass transport, and a freight train pulls dozens of wagons. In this process, is the person driving the locomotive re-

ally such a massive cost factor that they have to be replaced by the introduction of complex and expensive technology? My impression is that having a person in the driver's cab is going to be unbeatable in terms of efficiency for the time being.

Ms. Leicht, are professional drivers also unbeatable in road transport?

KL To replace them, we would likewise need complex and expensive technology. And people are still needed because we have to have control centres in which employees monitor the movement of goods. The advantage, however, is that for most people these jobs are more socially acceptable than being a professional long-distance trucker who covers thousands of kilometres on motorways. We shouldn't underestimate this factor, especially as we can see right now how dire the shortage of lorry drivers already is.

Let's turn our attention from motorways to cities, which get heavily congested with delivery traffic. Could automated or autonomous transports help here, like the people movers that are already in use in passenger transport?

KL First of all, freight transport has an advantage over passenger transport: There are no passengers on board to take care of and keep an eye on,



and you also don't have a lot of stops where people get on or off. Cities and manufacturers are testing possible applications for self-driving people movers in pilot projects, and, in my view, we should think more about how these vehicles could also be used to transport goods.

HV The disadvantage of “freight movers” like these is that, unlike human passengers, the cargo won't load and unload itself independently. So, there need to be systems that will regulate the departure and reception criteria for automated delivery transport. But there have only been very few developments in this area to date. A lot is being done to ensure that automated driving is a success, but sorting out the actual route travelled by goods vehicles is at most half the battle. What happens to the goods before and after is at least as important.

Ms. Leicht, Dr. Vallée, are there synergy effects within the TÜV NORD GROUP in your fields of work?

KL Yes, there's been a lot of action here in the past few years. For example, I'm in contact with some companies, including TÜVIT, for instance.

We get the lowdown on research projects, meet at conferences, exchange knowledge where colleagues from the rail sector are also present. So we all benefit from the definite synergy effects. At the same time, of course, we also rely on highly effective networking in our own business unit, e.g. for software updates and cybersecurity.

HV The connection with TÜVIT is crucial because software and security are key issues. The challenge will be to secure the communication channels between vehicles or between a vehicle and its control centre; to ensure that no one hacks into the system from their bedroom and causes chaos or accidents.

What role is TÜV NORD playing in the movement towards full automation and autonomous driving on rail and road?

HV In the railway sector, we at TÜV NORD are looking at what our customers want to achieve in this area so that we can then clarify the question of whether the technical development is safe enough in areas like security and operations – or whether there are areas where the customer needs to take a closer look.

“We should think more about how autonomous people movers in cities could also be used to transport goods.”

Katrin Leicht, TÜV NORD Mobilität

KL In the road sector, we aren't so much drivers as supporters of the development. We see ourselves as an institution that will take an objective view of this issue. We're often confronted with future scenarios that predict rapid progress. Our role is to stay realistic and identify the gaps that still need to be filled. Appropriate test methods have to demonstrate that systems of this sort are safe and secure enough before they get placed on the market. The routes on which automated vehicles travel must be appropriate for the vehicle and its autonomous capabilities. Which is where TÜV NORD enters the picture: The media are shouting about rapid progress, and we don't want to slow down this progress but to make it safe. The matter is so complex that it's advisable to proceed step by step.



Making Visions *Move*

It is their enthusiasm for innovation and progress which drives the employees of the TÜV NORD GROUP to break new ground and find solutions to existing challenges. Six examples show how visions can create real added value.



Rapid tests for traction batteries

Jens Staron,
Head of Business
Competence TÜV NORD
Mobilität, and
Leif-Erik Schulte,
Executive Vice President of
the Institute for Vehicle
Technology and Mobility at
TÜV NORD Mobilität



New test procedures are offering fleet operators, dealers and private individuals greater certainty when it comes to battery condition.

Anyone who buys and sells used electric cars, repairs them or wants to maintain them, needs information about the condition of their most important components. One such crucial component is the traction battery, which accounts for about a third of the vehicle's value on average. "However, reliable methods for evaluating the battery's state of health are currently lacking," says Jens Staron, Head of Business Competence at TÜV NORD Mobilität.

To be able to offer customers such as fleet operators, car dealerships or workshops a needs-based solution, TÜV NORD is testing various procedures and currently offering a two-stage test model. The system consists of a rapid test with diagnostic software. "A car dealership doesn't test the charging and discharging processes over several days to monitor the parameters. Customers need affordable tests that work quickly," says Mr. Staron. And this is precisely what is offered by the quick check, which has been verified by TÜV NORD and delivers results in 15 minutes. In the event of abnormalities, a more intensive test can be carried out which is equally suitable for the real-life monitoring of model series that are already on the market. "It's reasonable for the test to take longer in the latter case," says Leif-Erik Schulte. He is Executive Vice President of the Institute for Vehicle Technology and Mobility at TÜV NORD Mobilität and sees that more work is still needed on the path to developing test procedures across the board: "For periodic technical inspections, we ultimately need a standardised industry solution to evaluate the state of battery health. Individual solutions wouldn't be comparable with one another." For this reason, TÜV NORD is testing several of the solutions on the market and collecting large amounts of important battery data.

One thing is clear, though: The demand for standards is already there. According to the Federal Motor Transport Authority, more than 470,000 fully electric passenger cars were registered in Germany in 2022. And then there are buses and lorries that require different test procedures. Looking to the future, Mr. Schulte says: "The market penetration of electric vehicles is increasing, and, in the future, there will be a Euro 7 standard that also covers the requirements for traction batteries for the first time. The requirements in respect of cybersecurity are also becoming more stringent. Assessment standards are going to be important by then, if not before."

Edinburgh-based GSI combines publicly available satellite data and other data stocks with machine learning to carry out detailed investigations for forest owners. For the TÜV NORD GROUP, the technology offers plenty of potential for synergies.

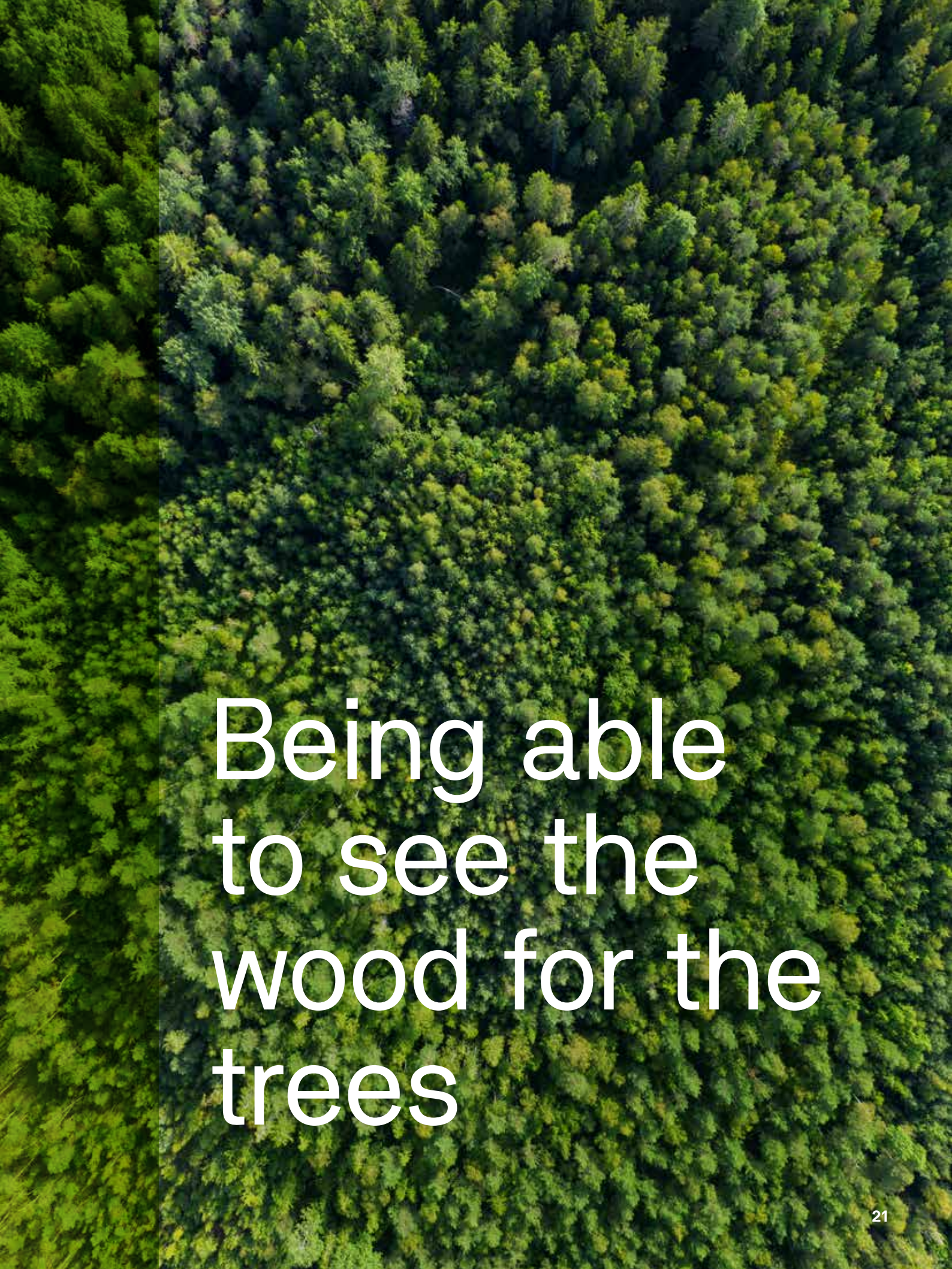
In the past, whenever forest owners have wanted to know how many trees they have, it has always been up to people to head out and count them in person. This is a very imprecise method, however, and simply not practicable for large forests. “In North America, you have forests which extend over many thousands of hectares,” explains Stephen Duffy. He is the managing director of ALTER TECHNOLOGY TÜV NORD UK, a subsidiary of ALTER TECHNOLOGY TÜV NORD (ATN) in Spain. The ATN Group represents the Aerospace business unit in the TÜV NORD GROUP. Mr. Duffy was additionally appointed to the Board of Global Surface Intelligence (GSI) as Investment Director in autumn 2022.

GSI uses satellite data and artificial intelligence, along with machine learning involving a patented method, to compile up-to-date and precise inventories of tracts of forest. Not only does this allow forest owners to find out how many trees they have, but GSI also provides information on tree species and sizes. “These data offer enormous potential for emissions trading,” Mr. Duffy explains. Trees absorb CO₂ in varying volumes and at different rates, where the species and size of the tree are crucial. “A company that wants to use forests to offset its CO₂ emissions needs to present exactly these data as evidence,” Stephen Duffy says.

With the investment of the TÜV NORD GROUP, GSI will further expand its existing activities; the importance of the “Forest Carbon Market” is set to increase enormously, but for GSI’s technology this is only the start, says Mr. Duffy. “Much of what the TÜV NORD GROUP does is about testing, inspection and certification.” And it is still common practice for someone to travel to the site in question in person, for example to inspect a gas pipeline or a mine. Stephen Duffy is confident: “With GSI, it will be possible to use satellites to do some of this work in the future.”



Stephen Duffy,
Managing Director of
ALTER TECHNOLOGY TÜV NORD UK

An aerial photograph of a dense, lush green forest. The trees are packed closely together, creating a textured canopy of various shades of green. A vertical white bar runs along the left edge of the image. Overlaid on the lower half of the forest is the text "Being able to see the wood for the trees" in a large, white, sans-serif font.

Being able
to see the
wood for the
trees



Travelling safely without a driver

Alex Gong,
Senior Project Engineer at
TÜV NORD China, and
Zhou Liang, Internal Oper-
ation and Training Manager
at TÜV NORD China



Fully automated underground trains are making public transport faster and more punctual. In the Chinese metropolises of Shanghai and Shenzhen, TÜV NORD China deployed its technical safety expertise in the simultaneous support of two such underground railway projects.

Fully automated underground trains offer many advantages compared to conventional systems: They can respond more flexibly to current passenger levels and are more punctual and less subject to disruption. However, the technical systems have to be absolutely safe and secure during actual operation. This need is especially acute if the highest grade of automation (GoA4) is realised, at which the trains operate completely without staff on board. The railway experts from TÜV NORD China have very quickly deployed their technical safety expertise in support of two fully automated underground lines in China: One in Shanghai and the other in Shenzhen. In both cases, the task of the expert teams was to undertake the complete documentation and inspection of the vehicles during their development and commissioning. “In the process, we audited the design and manufacture of the vehicles, for instance, as well as monitoring the vehicle tests. Once these important phases were over, we were able to issue the certificate for the autonomous operation of these underground lines,” says Zhou Liang, Internal Operation and Training Manager at TÜV NORD China.

The fully automated underground line 18 in Shanghai commenced commercial operation in December 2021. “During peak hours, the trains operate at up to 86 percent capacity, and an extension to the line is already being planned. And we will be given the job of auditing and certifying this too,” explains Alex Gong, Senior Project Engineer at TÜV NORD China. The fully automated underground line 16 in Shenzhen was opened to the public at the end of 2022 and complements the existing autonomous train system there as part of the public transport network.

Seismic explorations from DMT are revealing the potential of geothermal energy as a climate-friendly, renewable energy source.



Olaf Brenner, Project Manager at DMT, and
Silke Bißmann, Senior Geologist at DMT

A virtually inexhaustible source of energy lies dormant beneath our feet – geothermal energy. This refers to the heat that is continuously generated in the Earth’s interior and “flows” towards the cold surface of the planet. With existing technologies, this resource can be used, for example as district heating for households and businesses. Seismic explorations provide information about suitable geological structures in the subsoil. The engineering service provider DMT, which belongs to the TÜV NORD GROUP, is Europe’s leading company in this field.

One of DMT’s most complex geothermal projects to date in the German state of North Rhine-Westphalia was the investigation of large parts of the Münsterland, including the city of Münster, in 2021/2022. On behalf of the state of North Rhine-Westphalia, DMT carried out the project as a complete service, which included everything from detailed planning, securing the necessary permits and execution of the explorations through to data analysis, geological interpretation and evaluation of the geothermal potential. “The particular challenge in this special case was to take explorations in a densely populated conurbation. We had to design them in such a way as to ensure that, on the one hand, all the structural and traffic-related conditions were taken into account, and on the other, that we would also obtain some meaningful seismic results,” says Olaf Brenner, who led the project at DMT. This pilot project will not be the last: Because geothermal energy supplies climate-friendly, renewable energy all year round, “this makes it a decisive element of the heating transition. By 2030, more than 400 new geothermal heating plants are due to be installed in Germany alone, and an individual exploration study is going to be required for each of them,” explains Silke Bißmann, Senior Geologist at DMT.

Geothermal energy for the Münsterland



The cyber detectives



Claus Krause,
Lead Cyber Security
Consultant at TÜV NORD IT
Secure Communications

First aid and digital forensic evidence in the event of hacker attacks

Hacker attacks are like the flu – no matter how many precautions you take, there’s always a residual risk of catching a virus. If a company is affected by an IT security incident, things get hectic very quickly. “This is an emergency for those affected,” says Claus Krause. The 35-year-old computer scientist from Speyer is the Lead Cyber Security Consultant at TÜV NORD IT Secure Communications and an expert in Digital Forensics and Incident Response. Mr. Krause and his team of three, who are spread throughout Germany, provide first aid in an emergency before embarking on a digital hunt for clues. Their contract customers range from small and medium-sized firms to listed companies. “In principle, anyone can contact us in an emergency,” says Mr. Krause. However, it’s a good idea to be in touch with an IT security partner beforehand so that you don’t have to spend ages looking for help on day X.

The most popular hacker scams are phishing e-mails with infected attachments. If an unsuspecting person at a company opens such an attachment, the software hidden in it can cause serious damage. “The attackers will often encrypt the victim’s storage media, so that they then no longer have access to their own data, and demand payment of a ransom,” says Mr. Krause. “The hackers often also threaten to publish the data.”

Once the horse has bolted, a race against time begins for the IT people. “It’s all about preventing the spread of the virus as quickly as possible. To do this, we get an idea of the type of attack, isolate the affected systems and interrupt the attack vectors,” Mr. Krause says, describing a typical scenario. After that, the vulnerabilities must be eliminated to ensure that this kind of attack does not happen again, and the final stage is to recover the data from backups to bring the affected systems fully back on stream. “Sometimes we do this remotely, but other times our people go out to the customer’s premises,” says Mr. Krause. The best thing about his job? “That we can help desperate people.”

Since the beginning of the coronavirus pandemic, digital learning formats have been booming. The live webinars at the Online-Campus of the TÜV NORD Akademie have been enjoying considerable popularity for some time. Now the digital offer has been expanded to include e-learning and online teaching, so that course participants can learn wherever and whenever they want.

The prospect of having to train a large number of employees on a specific topic is enough to keep many managers awake at night. Even if online formats eliminate travel expenses, time-bound courses mean that, for a certain period, all the employees are away from their desks and not picking up on their day-to-day work. "This is impractical, especially if the courses are short, say 20 minutes for instance," says Henning Detjen, who works in corporate development at the TÜV NORD Akademie. For this reason, the product portfolio of the OnlineCampus has been expanded under his leadership to include e-learning and online teaching. To make the offer as user-friendly and appealing as possible, the academy's own graphics department was also involved in the process. "I've watched the academy grow for many years and am now pleased to be involved in its further development," says media designer Sylvia Bauer, who, with her colleague Melanie Grass, also acts as an interface to the production company that creates the content of the formats.

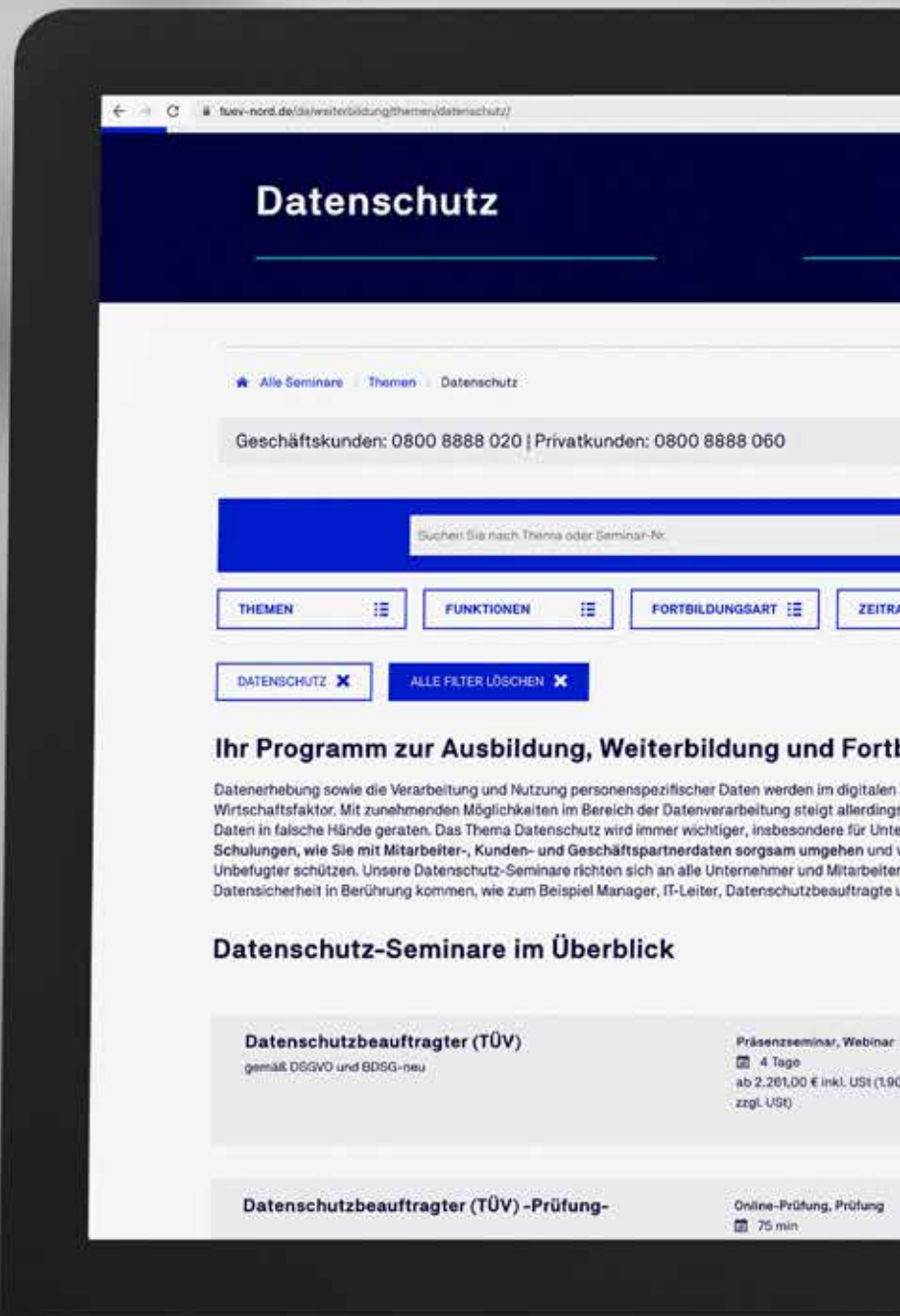
The new business model is ideally suited to mandatory instruction – for example in the fields of employment, health and data protection, including all their legal aspects, reports Mr. Detjen. Participants have access to the content all year round at any time and from anywhere. "This makes the learning process really flexible."

Currently, the focus is still very much on online teaching; in the near future, Mr. Detjen and his colleagues aim to further expand the e-learning range: "Our goal is to set up a whole database full of e-learning modules on all conceivable topics."



Henning Detjen,
Business Developer at the
TÜV NORD Akademie, and
Sylvia Bauer,
Media Designer at the
TÜV NORD Akademie



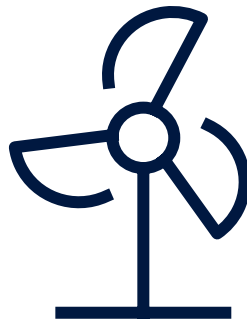


The flexible classroom

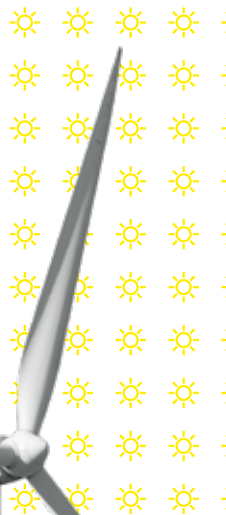
The enablers



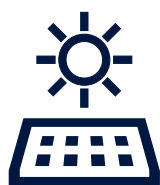
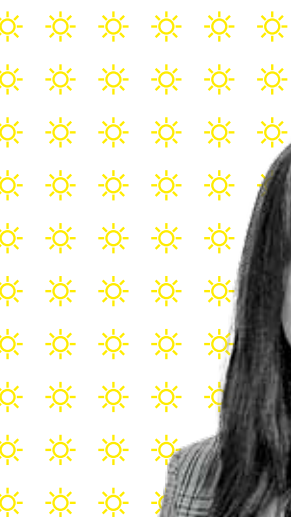
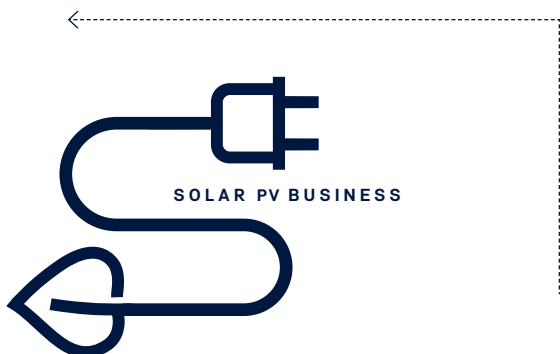
RENEWABLE
ENERGY



WIND



OFFSHORE PROJECT



SUN



Dr. Britta Schacht and Angella Xu, two of the women executives in the TÜV NORD GROUP, are doing their bit to ensure that the energy transition continues to gather momentum. By offering certifications, their teams in Hamburg and Shanghai are working to ensure that increasingly modern plants will reliably, safely and efficiently convert the power of wind and sun into electricity.

The energy transition is a global necessity. If the climate change issue is to be addressed, global society must quickly and efficiently replace fossil fuels with renewable energy sources – an extraordinarily complex undertaking. A major role in this endeavour is being played by the plants that generate this kind of energy, especially from wind and sunshine. These plants need to be equipped with state-of-the-art technologies, and there are also statutory regulations, which vary from country to country.

To ensure that the momentum does not get lost under the weight of such guidelines, newly developed plants need to be quickly and dependably inspected and certified. And it is here that the TÜV NORD GROUP has a key role to play on the global market: With its services, it is helping to ensure that neither speed nor quality are sacrificed as the energy transition takes hold. The responsibility for this within the Group rests with two units, both of which are led by women who are using their clear ideas about leadership to advance the cause of the energy transition.

Dr. Britta Schacht: Solution-oriented support for the energy transition

Join us on an excursion to Hamburg, where Dr. Britta Schacht, Senior Vice President Certification Renewables, is responsible for all the certifications in the renewable energy sector carried out in the TÜV NORD GROUP, by far the biggest share of which is accounted for by wind energy.

Britta Schacht's division employs 85 members of staff, divided into five teams, whose job it is to evaluate all the technical aspects of the plants, which as of very recently include the world's largest wind turbine, designed by Siemens Gamesa. "Our clients generally come to us at an early stage of their project development," she says. "Our job is to evaluate whether the engineers' assumptions and calculations are correct." Just how complex these certifications are is shown by the huge volumes of data that are accumulated in the process. "Load assumption calculations, for instance, which have to do with the external forces operating on the plant, are often so vast in scope that they can't be transmitted via the Internet but have to be sent to us on a hard drive."

When it comes to the question of the role she and her teams are playing in the energy transition, Britta Schacht, who holds a doctorate in structural physics, barely hesitates before answering: "We see ourselves as enablers." At the moment, it's easy to see that the industry is under pressure. "Policymakers and society are clamouring for the manufacturers to realise their projects quickly and increase the output of the plants even more. At the same time, a lot of the contracts were concluded at a time when the costs of raw materials and production were much lower than they are now." The situation is complicated, in other words – which is why the aspiration Britta Schacht has formulated for her teams is "to work reliably, but also to support our customers in this process." Here's a specific example: If there is a hitch in the certification of a particular component in a wind turbine, Britta Schacht and her teams don't call a halt to the overall process. "Instead, we evaluate as many of the other elements of the wind turbine as we can so that the manufacturers can sort out the problem while continuing to work on prototypes." Experience has shown Britta Schacht that her clients appreciate this approach. "Most of them don't see us an institution which is out to cause problems but instead as a partner who offers them another quality loop while supporting the development process."



“The momentum of the sector is keeping us on our toes. And that’s why it’s so much fun for everyone who is passionate about the energy transition.”

Dr. Britta Schacht, TÜV NORD EnSys

To help them meet the challenges posed by their stated aims, the project teams have adopted an agile organisational form. "We don't do standard evaluations," Britta Schacht explains. "Technical innovations are constantly coming onto the market, for example floating foundations for offshore wind farms that open the way for power generation from deeper waters." The legal guidelines and market conditions are also constantly changing, and, in the form of green hydrogen, a new key technology for the energy transition is poised to make a breakthrough. "There's no doubt that this momentum is keeping us on our toes," says Britta Schacht, 50 years old with 20 years of experience in the TÜV NORD GROUP. "And that's why it's so much fun. Not just for me, but also for the many young people in my teams who are passionate about the energy transition." To make sure that she is an attractive employer for such sought-after talents at a time when specialists are in short supply, Britta Schacht has developed a team culture based on personal and technical development. "I believe in the principle of swarm intelligence," she says. "Every bit of dialogue brings the whole team on. I see it as a key leadership task to both insist on and encourage this kind of communication."

Angella Xu: An open culture brings efficiency

From Hamburg we travel to Shanghai to meet Angella Xu who, as Senior Vice President Renewables, works in the Chinese industrial metropolis and is responsible for the TÜV NORD GROUP's photovoltaic business.

With her team, Angella Xu certifies solar systems, especially those made in China, for the global market. She joined the TÜV NORD GROUP twelve years ago, at a time when her current field was still in its infancy. "The management in Germany entrusted me early on with the task of building up and developing this sector," she relates. She quickly found her feet in the diverse Chinese photovoltaic market and put together a highly effective team. What helped her was the freedom to act as she saw fit without having to involve the management in every decision. "This allowed us to concentrate fully on our work," says Angella Xu.

The focus of the work in Shanghai is on the certification of products made in China for the international market. "For these producers, our certification is the entry ticket for global trade," she explains. The principal challenge is to maintain an overview of the wide-ranging and constantly changing international guidelines, she continues. "Each country moves at its own speed and makes different demands." Manufacturers who want to export their products are confronted by a confusing thicket of regulations. With its 50 members of staff, Angella Xu's team boils global diversity down to a single pithy utterance. "If you adhere to our standards," she stresses, "then the doors to the global market are open to you."

In this area, TÜV NORD China not only offers product testing for photovoltaic modules, inverters and certifications for manufacturers, but also supports Chinese investors in their international photovoltaic projects. TÜV NORD's clients in Shanghai include many of the major Chinese producers. Her team does more than just validate the information provided by the manufacturer, however: In a laboratory, the experts also use a sunlight simulator to test a solar panel's actual power output. "These data are interesting for clients, of course, because they don't generally have their own test laboratory for this purpose."

Angella Xu was born in 1979 – making her the oldest member of her very young team. "As soon as I start talking to people, I get a gut feeling about them," she says. This has allowed her to develop a leadership style that combines care and efficiency. "My idea of teamwork is that we trust and respect each other – but also that we don't make things unnecessarily complicated." In every project there is a phase in which the team comes together to work out a strategy and draft a plan. "That's the occasion to have your input, air your concerns or ask for support." Once the implementation phase begins, her expectation as a manager is for everyone to do their job. "If any problems arise, I want to hear about them. After all, efficiency is only possible if you have a culture of openness. Anyone who keeps their troubles to themselves will act as a brake on the project – and that's something we don't have the luxury of in this business."

At the end of the interview, Angella Xu offers an insight into how she manages to keep reflecting on her own behaviour: "At night, before I go to sleep, I get my thoughts in order. I ask myself at what points I was satisfied with my own performance during the day – and when I wasn't. Late night thoughts like these don't lead her into a state of ruminative sleeplessness – quite the reverse: "They give me a good feeling for the following day with its new challenges."

"For producers of solar power systems, our certification is the entry ticket for global trade."

Angella Xu, TÜV NORD China



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