



MOBILITY WORLD

1/24

The FERCHAU Automotive magazine

Need for speed

Pedal to the metal: Faster, ever faster. But why are we so addicted to speed? Because electrons are whizzing round our bodies at the speed of light? An approach.

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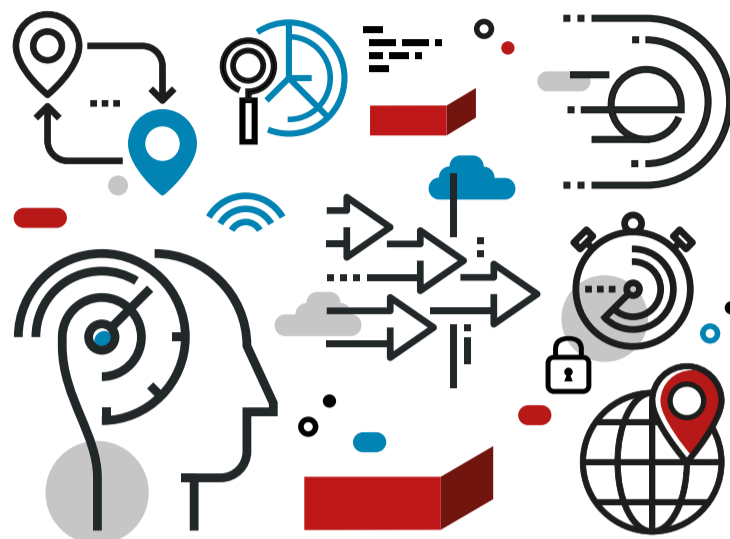
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Legal notice

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Oskar-Schindler-Strasse 3
D-50769 Cologne
zentrale-automotive@ferchau.com

Responsible for the content:
Bernd Gilgen

External editorial office:
Büro 504, buero504.de

Editorial management:
Martina Gebhardt

Realisation and design:
grafish GmbH, grafish.de

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China, Volkswagen and the »Nibelungs«

Dear readers,

China is celebrating the Year of the Dragon in 2024. The dragon, as I learnt in a Deutschlandfunk radio report at the beginning of the Chinese New Year, symbolises power, energy and vitality in many parts of Asia. A fitting analogy – equally so for the automotive industry. **This is because Chinese companies are piling the pressure on the established manufacturers.** Last year, BYD, a Chinese manufacturer of mainly electric cars, sold more cars in China than VW – combustion engines, hybrids and electric cars combined. This is the first time in 15 years that Volkswagen has been ousted from the head of the leaderboard as the best-selling brand in China. In the fourth quarter of last year, BYD even surpassed the previous industry leader Tesla for the first time in the number of electric cars sold worldwide. The Chinese dragon comes with enormous energy and seemingly unfettered power and vitality. And BYD is just one of many strong automotive companies to come out of China.

I'm delighted to see how up-to-date this new issue of Mobility World is. Firstly, the editorial team analyses the potency of the Chinese market and the product offensive from Chinese car manufacturers. **Secondly, we were able to tempt Thomas Schäfer, Member of the Board of Management of the Volkswagen brand, to give us an exclusive interview.** We all still have his warnings from last year ringing in our ears: The »perfect storm« is brewing. The »roof is ablaze« at German car dealerships.

Schäfer explains on three pages in Mobility World how he is preparing Volkswagen for this storm: with even better products, with customised offers that also cater for the next generation of mobile people, Generation Z, who are growing up in the digital age and may no longer be able to do as much with previous bestsellers such as the Golf or the Passat. **Schäfer impressed me in the interview as a responsible, empathetic, but also demanding manager.** As an example, I find it charming and, above all, respectful towards their employees to present the new generation of the Tiguan to their own workforce first. Only then was the rest of the world allowed their first look at the completely revamped successful model. The corks were popping at this major event in Wolfsburg. This is fitting and important despite the critical situation: to be proud of what you have achieved together, of the values that your brand has stood for over the years, irrespective of the fact that a dragon



»» **The corks were popping in Wolfsburg. This is fitting and important despite the critical overall situation.**

bursting with power is scratching its claws at the door. After all, we have known this at least since Siegfried's heroic deed in the Saga of the Nibelungs: dragons also have their Achilles heel. You just have to find it.

Enjoy reading!

Yours
sincerely,

Bernd Gilgen
Managing Director FERCHAU Automotive

NEED FOR

*Pedal to the metal:
Faster, ever faster.*

*But why the need for **S P E E D** ?*

That is the crux of our existence: We aspire to be fast – yet we are slow by nature. Normal walking pace is at a speed of just four kilometres per hour. The fastest runner of all time, Usain Bolt, achieved a top speed of 44.72 kph in Berlin in 2009 when he set a world record of 9.58 seconds over 100 metres. Sounds pretty cool? Better not tell that to a cheetah; they can sprint at 120 kilometres an hour. The lanky giraffe, despite its awkward running style, easily manages 50 kph across the plains. And even the heavyweight hippopotamus makes us humans look a little geriatric with its top speed of 48 kph.

So what do we do instead? We invent machines that make us go faster. Zooming round the Nordschleife, through the Sahara, over salt lakes on the quest for new speed records. We charge round in circles at 360 kph, call it the »Formula 1 World Championship« and rave over hundredths of a second. We measure every step, every muscle fibre, just so we can set new records on foot. We race against each other in the North Pole Marathon

at minus 40 degrees Celsius. We plunge down black slopes on high-tech skis. Or, like the Austrian extreme athlete Felix Baumgartner, let ourselves fall through the sound barrier from almost 40,000 metres in the strato-sphere down to earth at a record speed of 1,357.6 kph.

Our evolutionary history is one of acceleration. The invention of the wheel or the printing press, the car or fully automated production plants – everything gets faster with the human spirit of innovation. Today, artificially intelligent computers are so fast that even their creators no longer have an exact handle on what bits and bytes are flying back and forth. We have invented a unit for periods of time that are actually no longer periods of time: for example, the time it takes a particle of light to pass through a hydrogen molecule is measured in zeptoseconds – a trillionth of a billionth of a second.

SPEED

Cover story: Need for speed

That's where most brains say «Enough!» and switch off. And because the phenomenon of speed is so difficult to grasp, we create a barely comprehensible theory of relativity courtesy of Albert Einstein, which somehow shows the path for our urge to move at the speed of light of 300,000 kilometres per hour. All things considered, that doesn't make us any faster.

The great poet Wilhelm Busch wrote in «Julchen» in 1877 – long before the invention of the car and aeroplane: **«One-two-three, whizzing along / time runs from us / and we run on.»** But why? Humans have come up with as many theories as there are speed records. These, as an example: We want to run away from death because faster steps reduce the risk of death, according to a study by the American Medical Association. In evolutionary terms, however, an addiction to speed has nothing whatsoever to do with behaviour that was developed in early prehistoric times, when cavemen tried to outrun the sabre-toothed tiger: the predator was too fast, so it was futile to run away.

Research is therefore now focussing on this theory: going faster is addictive.

Traffic psychologist Professor Bernhard Schlag from TU Dresden has evaluated the brain waves of car drivers and has drawn the following conclusion: In search of «the kick», driving fast stimulates the regions of the brain that release the happiness hormone dopamine, as do other addictive substances such as alcohol, nicotine or heroin. Time researcher Robert Levine confirms this: «We are addicted to speed», says the US scientist. «It stimulates and drives us. The terror of boredom is one of the greatest horrors in our sped-up world.»

The addiction to speed is producing some bizarre results: streaming provider Netflix, for example, recently tested a function that allows films to be watched at 1.5 times normal speed. Relaxation and drinking in culture in fast-forward. A paradox if ever there was one. But the French speed theorist Paul Virilio had already predicted this back in 1990 in his essay «Polar inertia». In an increasingly fast-paced world, new technologies are leading to a situation in which people are constantly upping the pace and whizzing data around the globe in real time – yet at the same time are sitting motionless in front of their screens. //

Speed limit: Speed of light

Humans may not be the fastest – **but inside us electrons are racing around atomic nuclei at high speed.** A paradox that we discuss with one of the world's leading accelerator physicists, Dr Ralph Aßmann from GSI Helmholtzzentrum für Schwerionenforschung – centre for heavy ion research.

Dr Aßmann, you are an expert in maximum speeds: you propel the smallest particles onto matter with incredible acceleration. Why?

It is man's fundamental curiosity: to understand what holds our world together at its core. What exactly is the matter that everything is made of? To do this, we have to shrink the matter in our particle accelerators. Investigating things by breaking them down using acceleration is something we humans are familiar with. Even babies break things down into their component parts. They do this by throwing the item on the floor.

What insights do you gain from the process of breaking things down?

An amazing amount, actually. Let's take the example of rare elements. This is an issue that is also crucial for the automotive industry, for the development of batteries. We need a lot of it, but there are only limited supplies. No wonder. They were formed by the collision of neutron stars. This galactic star dust became deposits of rare elements when the Earth formed.

So, perhaps this process can be replicated artificially? We are also working on this within our particle research.

You'll have to explain particle acceleration to us.

It's a common method to better understand matter. Matter is bombarded with rays, with very high-energy particles. Ions are the heavyweights of particle research. It's like being on the street: there are small cars, which in our case would be the light electrons, and there are particularly heavy models, which are the ions. These need more energy to accelerate.

So ions are sort of the SUVs of particle acceleration?

If you like (laughs). Ions are electrically charged atoms with an atomic nucleus. In our research, these are regarded as »heavy«, as opposed to the electrons that fly around the atomic nuclei. We are accelerating these »heavyweights«. Completely new atoms can be created in collisions. We have achieved this here at GSI. The »Darmstadtium«, named after us, is a completely new element.



Do you actually have a speed limit on the ion motorway?

Yes. A very natural one: the speed of light. Nothing is faster in this world.

The natural deceleration in accelerator operation ...

A law of nature. The more energy you put into accelerated particles, the faster they become. At very high energies, however, it is mainly their weight that increases and no longer their speed. Einstein discovered this with the theory of relativity. There is a natural, usually rather theoretical speed limit in life, and that is the speed of light, which is around 300,000 kilometres per second.

Speed seems to be a crucial element of our existence. We are made up of atoms. Electrons zoom around the atomic nuclei. So does that mean we are, in a way, constantly on the move in our innermost being?

Yes and no. The atomic nuclei are practically at rest within us, apart from thermal oscillations. They are, if you like, the resting poles of our body. It is the electrons that are constantly in motion, that's true. They orbit the cores at more than three million kilometres per hour. Depend-

ing on the nuclear mass, they can also become significantly faster, but never faster than light. That is our agile strength. Atoms form molecules via their electron clouds. This is how the world is put together, out of a principle of constant movement.

Humans aspire to be fast, but are slow by nature. Even a hippopotamus runs faster. We therefore rely on motorised power. Is this a consequence of this inner restlessness? Our high-speed electrons in the atom?

We are masters of acceleration. We know how to get things moving. And that makes us fast. That makes us successful. And also dangerous. We don't just accelerate the toy car, the family estate car or the aeroplane. We accelerate spears and rockets. A certain deceleration is therefore not the worst thing that can happen. By the way, slowing down is also an important part of our research. We create new atoms through immense acceleration and collisions. But then we catch them again and slow them down. We can only grasp and measure them properly when they are decelerated. //

Faster and faster...

Some speed records make you dizzy just reading about them. Rapping, cycling, mowing the lawn – just a few of the craziest speed records.



Reversing: 275.74 kph

Almost 300 kph in reverse gear? Is that even possible? Yes, it is! You bet it is! In October 2023, the Croatian company Rimac set a pretty unusual speed record for passenger cars. The electric **Nevera super sports car travelled backwards at a speed of 275.74 kph**. The stepless electric drive makes it possible. The electric racer is a whole lot faster going forwards – up to 412 kph. However, even this is not quick enough to take the title of the fastest road-legal production vehicle. The Tuatara model from US manufacturer SSC can reach speeds of 533 km/h. But only forwards. Yawn...



Mowing the lawn: 242.99 kph

Lawn mower or racing car? The lines get a bit blurred with the **Honda Mean Mower MK2**. In June 2019, the pimped-up ride-on mower – with a sports bucket seat, 10-inch wheels and a 191.8 hp four-cylinder series engine – reached a record speed of 242.99 kph at the Lausitzring. The mower is based on Honda's HF 2622 lawn tractor, which trundles along at just 8.2 kph without the tuning kit. And in case English lawn aficionados were wondering: it is not known at what speed the carbon cutting unit of the Mean Mower MK2 leaves an uneven cutting pattern.



Rapping: 7.46 w/s

224 words in 30 seconds, the equivalent of **7.46 words per second** – that earned an entry in the Guinness Book of Records. Never has anyone rapped faster on a number 1 hit than US musician Eminem managed in the third verse of his song »Godzilla« from 2020. Incidentally, he already has an entry in the Guinness Book: in 2013, Eminem rapped 1,560 words in the 6:03 minute single »Rap God« – the record for the most words in a song. Marshall Bruce Mathers III, Eminem's real name, is now the most successful rapper of all time, having sold 220 million records.



Driving on Mars: 0.144 kph

With a speed of 0.144 kph, i.e. 144 metres in one hour, the vehicle **Curiosity** nevertheless holds its own unique record: that of the fastest vehicle on Mars. It has to be said, though, it is also the only one on the red planet. The Mars rover robot landed on 6 August, incidentally at an initial approach speed of around 20,000 kph. To put the leisurely cruising speed on Mars in perspective: even sloths, the slowest mammals on Earth, can reach speeds of up to 0.27 kph in dangerous situations – twice as fast as the Mars rover.



Nosedive: 320 kph

Take a guess: **What is the fastest animal in the world?** The cheetah? Dolphin? No. In fact, the peregrine falcon is the record holder in the animal kingdom – but only when it's nosediving. It reaches speeds of more than 320 kph. A peregrine falcon would therefore easily outpace jet aeroplanes on approach (at a mere 200 to 300 kph). But it's not bothered about that: It uses its superior speed to hunt starlings, thrushes and pigeons. A pigeon, for example, can also reach speeds of up to 177 kph. That's not much help against a peregrine falcon in a dive though.



Calculations: 1.194 exaflops/second

The fastest computer in the world is the **HPE Cray Frontier system** at Oak Ridge National Laboratory in the US state of Tennessee. The computing power is 1.194 exaflops – more than a trillion flops – per second. Flops indicate how many mathematical operations for processing data can be done within one second. Analogue human brains just can't keep up. Aaryan Shukla from India is one of the fastest human mental calculators in the world. At the 2022 mental arithmetic world championships in Paderborn, the then twelve-year-old solved ten problems, each of which involved dividing a ten-digit number by a five-digit number, in 41.6 seconds. That would be 0.24 flops per second.

Cover story: Need for speed

Validated is safe



Validation is a critical discipline in vehicle development. **FERCHAU Automotive supports its customers in getting individual components and complete vehicles ready for the start of series production.** Specially designed test benches, digital twins and mobile measuring laboratories are used to achieve this.

The car whizzes past. At precisely 80 kph – no more, no less. André Jeuther sits in the FERCHAU Automotive measuring bus and checks the figures. Yes, that was it. Perfect. The new vehicle model from a German premium manufacturer has driven past André Jeuther and the mobile measuring laboratory more than a hundred times. Over the past few days, an experienced test driver has squeezed the accelerator pedal with such millimetre and millisecond precision that the measurements are now complete. The vehicle is »acoustically validated«, as Jeuther, Project Manager for Acoustics and Exterior Noise at FERCHAU Automotive, puts it.

What that actually means is that the vehicle complies with all regulations and standards of its target market, so that nothing stands in the way of approval from an acoustic perspective. As part of what is known as a typification process, the noise generated by the car in a wide variety of driving scenarios, at all speeds and on every conceivable road surface, and



André Jeuther

which can be heard by the outside world, has been tested. Nothing is left to chance here. The tarmac, measurement technology and driving style are clearly defined, even the temperatures during the tests, the ambient noise and how far the nearest tree may be in the vicinity are specified.

»This is how we ensure that every one of our customers' vehicles fulfils all legal requirements« explains Jeuther.

And if it doesn't? »Then we can offer crucial support with specific recommendations for optimisation based on our many years of experience in the field of acoustic validation.«

Before the new hybrid model can be rolled out to dealers, the licensing authority in the future area of use must give its approval, which they base on the measurements carried out by FERCHAU Automotive. And the licensing authority in this specific case is far, far away from the test track. For this reason, one of the manufacturer's employees drives the vehicle into a container immediately after it has successfully completed the validation course. Next stop: China. This is because the validated version of the model had been developed exclusively for the

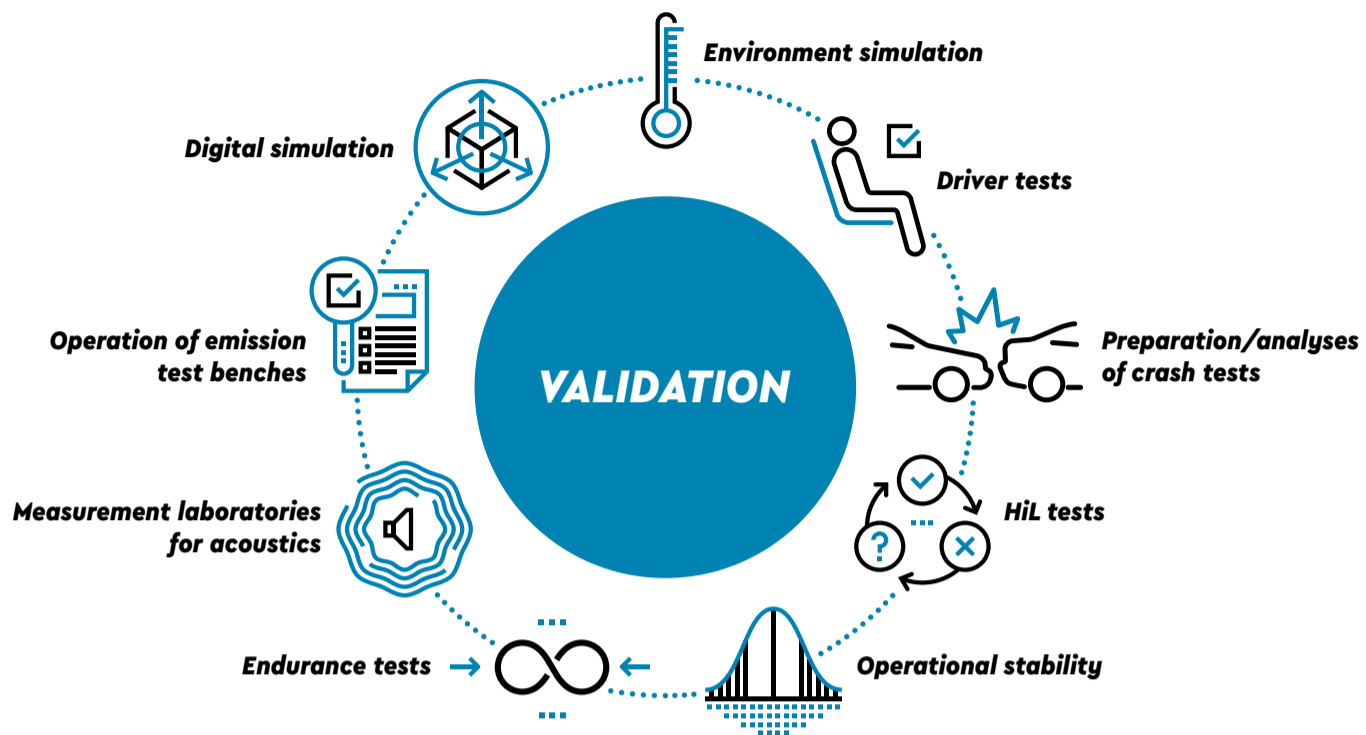
Chinese market. The acoustic validation of the new premium model is part of a major new order from the manufacturer. Since the middle of last year, FERCHAU Automotive has been validating all of this company's new models for all markets, from conventional combustion engine small cars to hybrid SUVs and electric vehicles, of which there will be more and more in the future.

FERCHAU Automotive is one of the industry's specialists for all validation scenarios – not just for acoustic typing. The development service provider has built up an impressive infrastructure of test benches for this purpose. In addition to several acoustic test benches and the mobile measurement laboratory at the branches in the Stuttgart area, various state-of-the-art test benches are used for component validation at the Wolfsburg site, for example, where media-carrying systems are also validated. Cologne specialises in the validation of software applications, while Ingolstadt specialises in interior matters. On request, FERCHAU Automotive can also support customers' own test benches as part of an operator model. »Basically, anything goes!« explains Holger Schramm, Head of Vehicle Development at FERCHAU Automotive. »We focus on our customers. Are test benches required for a new technology area? If required, we can develop a customised validation infrastructure for every imaginable area.«

Last year, for example, a new testing system for wiring system components was put into operation at the Wolfsburg site. A motion unit was developed that puts components through a stress test in a cold chamber at temperatures of up to minus 30 degrees Celsius with up to 1.5 million load cycles, while permanently monitoring the cable resistance. Cables and earth straps, for example, can be tested on two axes, so including in a circular or elliptical movement. In addition, the cooling circuit, for example, and the design of the pump and cooling capacities are digitally simulated. »Our development work can thus be significantly improved because we can now also carry out real-life testing after the simulation« says Christoph Liebe, Branch Manager of FERCHAU Automotive



Christoph Liebe



in Wolfsburg. This makes it possible to check whether the functionality of a component can be improved in practical usage and wear reduced if it is positioned differently, for example. FERCHAU Automotive is helping to further increase the safety of electric vehicles in this way.



Gerrit Hodemacher

The development service provider recently won an exciting contract in this field of activity. The team in Wolfsburg is now developing digital twins of highly complex wiring system architectures for another premium manufacturer. **»Electrical and thermal validation is an extremely important development topic for us«**

explains Gerrit Hodemacher, Head of E/E at FERCHAU Automotive. »The currently rapidly growing topic of electromobility is giving rise to a whole host of new validation considerations.« Thomas Müller, one of FERCHAU Automotive's most experienced calculation engineers, is in charge of the new major order. »We have digitally reproduced a complete vehicle electrical system. The influences on safety-relevant components such as brakes, cooling or steering for new developments can be analysed in advance on the digital image – and any problems eliminated immediately.«



Thomas Müller

Müller's team is also setting up a database for the customer in order to harmonise all the results from developments in the customer's various departments. **»The development statuses of other components involved can be called up in a kind of virtual cockpit at the touch of a button, data can be exchanged and 'digital weddings' visualised«** says Müller. The objective: functional validation via the digital twin. And thus, accelerating the development process.

FERCHAU Automotive is ideally positioned not only technically but also legally for the usually sensitive validation mature of such projects. Last year, the Wolfsburg and Stuttgart South branches were accredited by the German Accreditation Centre (DAKKS) for media-guided test benches and acoustic

measurements. **»This underpins our quality standards for our technical expertise. As an accredited service provider, we help to ensure the quality and safety of vehicles in accordance with international norms and standards«** says Holger Schramm, Head of Vehicle Development. In particular, meeting the DIN ISO 17025 standard for testing individual components or assemblies serves as the highest quality standard and is audited every two years by the German Accreditation Body.



Holger Schramm

Because it is not only the calculation and simulation of new vehicle functions, but above all their validation in accordance with demanding automotive standards for newly developed components that has »become a very critical area in research and development,« says Holger Schramm. »It is an exciting field because we are often confronted with completely new topics and technologies and can actively and creatively help shape the future of sustainable mobility.«

Even the most experienced validation experts at FERCHAU Automotive are sometimes taken by surprise. The engineers naturally have to deal with the legal regulations and standards of each target market as part of the new major contract for the acoustic standardisation and validation of all new vehicle models from the German premium manufacturer. Test engineer André Jeuther recently received new driving noise standards from India, an important and growing market for the customer. He had to laugh: »The regulations looked like an Indian restaurant menu, brightly coloured and with elephants on the front.« But that didn't throw him off course at all. After all, strict regulations apply in India as well. So Jeuther and his colleagues sat down in the mobile measuring bus and let the new vehicle model for the Indian market whizz past them over a hundred times. //



The treasure hunt

Philipp Nolte explains the »Hexapod project« to employees during AI training – a specially developed hardware demonstrator that makes reinforcement learning clear.

Artificial intelligence is a key innovation driver in many industrial sectors. FERCHAU Automotive is now bundling its AI expertise in a »AI Core Group« to offer customers new services in areas such as data management.



Competence from the company

Philipp Nolte had an exciting appointment on 13 November last year. It took place at the Caracciola Carousel. Any automotive expert will instantly know: that must have been one heck of a demanding encounter. Because the Caracciola Carousel is one of the most notorious race track sections in the world. Built in 1927, the banked curve at kilometre 13 of the Nürburgring-Nordschleife has pushed generations of drivers to the limits of their skills. Not Philipp Nolte though. Because on that Monday he was not in the Eifel, but at the Caracciola Carousel in Cologne. This is the name given to one of the meeting rooms at the FERCHAU Automotive branch on the Rhine. The name was entirely appropriate though.

This was a pretty demanding encounter – all about the huge topic of artificial intelligence. At the end of 2023, Philipp Nolte, Project Lead Software Development/AI at FERCHAU Automotive, led the first session of a new internal training programme in the »Caracciola Carousel« room. Over the course of 12 weeks, experts in mechanical engineering, automotive engineering, electrical engineering, control engineering and software programming are shown the great opportunities – and hurdles to overcome – when dealing with intelligent algorithms. This also involves developing creative approaches for innovative customer projects. »It is crucial for a development service provider like FERCHAU Automotive to be well positioned when it comes to the key topic of AI,« says AI expert Philipp Nolte. »Many customers are still at the early stages when it comes to artificial intelligence. Although they are aware of its importance, they do not have

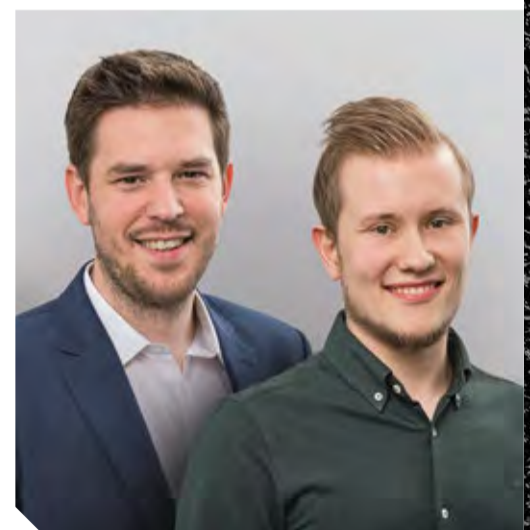
the expertise or the specialists to use AI effectively. That's where we come into play.«

Philipp Nolte and Daniel Obrenovic, Division Manager Car IT at FERCHAU Automotive, set up an »AI Core Group« a year ago in order to manage this »game« skilfully. Their goal: to drive forward the topic of artificial intelligence with an internal audience. Pooling the knowledge available within the company and identifying business potential. In short, to be able to offer customers »state-of-the-art AI support«, as Daniel Obrenovic explains.

Feelers not only go out to all of the automotive service provider's branches. The existing but not yet centrally logged expertise present throughout FERCHAU in handling and using artificial intelligence is to be prioritised. This is already paying dividends: several AI projects have already been initiated in the AI Core Group – internal training being just one of them. A hardware demonstrator with a hexapod platform and AI-controlled motors was developed in a »reinforcement learning« project. It can be used to demonstrate the potential offered by AI-controlled control technology to customers or at trade fairs. Another customer was recently shown the benefits of a »predictive maintenance model« to use AI-managed data to help operate vehicle fleets more effectively.

The last example illustrates this. The greatest potential is not currently in the automotive sector. »For regulatory reasons, most manufacturers on the European market are still hesitant to use AI in series development of safety-relevant

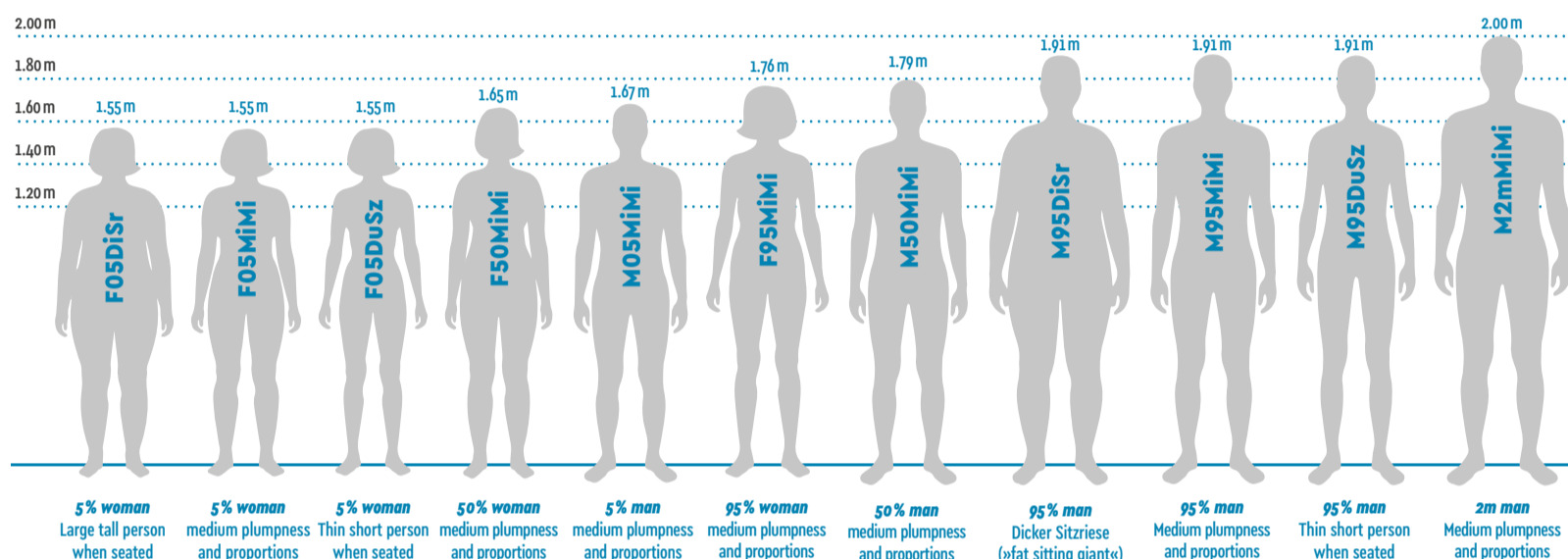
functions,« explains Daniel Obrenovic. This is why the AI Core Group is now focussing on data management. The development of AI-driven knowledge databases is »a promising field when it comes to making business models significantly more effective,« says Obrenovic. »Many of our customers, not just from the automotive sector, are sitting on a treasure trove of data that is not being exploited. We seek out and find this treasure together with our customers – and use AI to profitably exploit it to increase the entire company's efficiency.«



Daniel Obrenovic division Manager Car IT, and **Philipp Nolte**, Project Lead Software Development/AI at FERCHAU Automotive, are in charge of the development service provider's new »AI Core Group«. One of the goals of internally pooling expertise is to identify where customers have potential to use artificial intelligence.

The millimetre business

The initial design drafts and the subsequent series appearance of a vehicle are worlds apart – especially when it comes to the precision of the dimensions. FERCHAU Automotive ensures that innovative designs can be put into practice. A very special family of test subjects is also used for this.



Competence: from the company

Really not very flattering at all: Sören Schuster describes the test subject as »plump« and »large«. Especially as it is talking about a woman for whom Schuster has another uncharming attribute at the ready: She is a »tall person when seated«, even though she is only 1.55 metres tall – just over 5 feet. And then the names in German... The test occupant is called »DiSr« for short. It is »not really clear«, as Sören Schuster, Head of the Concept Development team at the Wolfsburg branch of FERCHAU Automotive, says with a laugh, whether this is their first name or surname. This short name, in fact, says it rather too directly: the abbreviation »DiSr« stands for »Dicker Sitzriese« in German, the literal translation is the crude description: »fat sitting giant«. However, unlike her colleagues from the analogue crash test who regularly crash into real walls, at least »DiSr« doesn't have to worry about how she is treated. She is a virtual 3D model.

To make it clear that we are not busy inventing crude labelling for such test subjects: Sören Schuster, an expert in the »feasibility assessment« of new car models, did not come up with these attributes himself. That was »RAMSIS«, the German abbreviation stands for the Computerised Anthropometric Mathematical System for Occupant Simulation. In other words: RAMSIS is used for ergonomic analyses and design support. The 3D model represents the characteristics and requirements of different body types in interaction with technical products. »DiSr« is part of the large RAMSIS family. All virtual family members have short names such as »DiSr« or »MiMi« (medium plumpness, medium proportions) and »SiZw« (short person when seated).

Sören Schuster and his team support car manufacturers in evaluating and conceptualising future vehicle generations. To this end, they safeguard new design models against a wide range of parameters, of which interior ergonomics is just one. »We analyse new vehicle developments at a very early stage, for example the capability of integrating individual components in the exterior and interior. Important concept design topics are Advanced Driver Assistance Systems including all sensors and cameras, considering active and passive safety, developing optimal space utilisation designs and, above all, implementing innovative designs in terms of technical constructability,« explains Sören Schuster. »Basically, everything that makes a finished vehicle ready for series production.«

The Schuster team receives a wide variety of data models from the customer, for example the dimensional design, which contains around 3,000 defining characteristic dimensions for length, width, height, wheelbase, seat positions, legroom or headroom. »The initial design drafts are usually far removed from what can later be implemented and affordable in series production,« says Sören Schuster. »Our job is to play around with the surfaces, clearances and gap dimensions until everything fits together perfectly.« To begin with, the variance is several millimetres; by the end, it is down to tenths of a millimetre.

»Nowadays, for example, new vehicle models depend on innovative interior designs and optimised space utilisation options in terms of comfort and user experience for their success,« says Sören Schuster. It is therefore not surprising that ergonomics is one of the key disciplines in concept design. Various scenarios are simulated

to this end with the help of the digital RAMSIS mannequins, for example to optimise the view of displays, gripping and operating designs or entry and exit scenarios.

»We always start with the worst case scenario,« explains Sören Schuster. He presses a button on his computer and lets »DiSr« get into a demonstration model – naturally, Schuster is not allowed to demonstrate on real customer vehicles. Fortunately, the virtual test driver with the short arms and plump physique is completely unfazed by having just been described as a »worst case scenario.« //



Sören Schuster (centre) is a specialist team leader for concept development at the Wolfsburg branch of FERCHAU Automotive. Together with his team (here: project team members Hannes Gottwald, left, and Pavol Levicky, right), he is analysing future vehicle models in the early phase with the aim of achieving a compromise between design, technology, safety, ergonomics and legal & OEM-specific internal regulations in a coherent vehicle design.

Positively crazy



Competences from the company



Katrin Leisner, Team Manager Validation, has helped to build up the motorbike department at FERCHAU Automotive. After eleven years, she is now moving to a major German manufacturer in the spring. **Kay Heger**, Project Manager Validation, will be stepping up to fill her shoes.

The motorbike market is booming. FERCHAU Automotive supports its customers in the **development of new two-wheeler models** from the validation of components and **software applications** right up to the final **type approval**.
A particularly exciting project has just been kicked off.

The mere mention of Bologna is enough to bring tears to the eyes of anyone with a passion for Italy. The city's iconic landmarks – the Torre Garisenda and Torre degli Asinelli, the Neptune Fountain in Piazza Maggiore, the list is endless! And not forgetting delicious tortellini – invented in Bologna of course – served with ragù alla bolognese! Kay Heger, Project Manager Validation at FERCHAU Automotive's Munich site, gets to admire the city from quite a different perspective: the saddle of a motorbike. His Ducati Panigale is even named after the suburb of Bologna where the manufacturer has its headquarters. Heger has quite a lot to say about this machine, which was built in 2016: the new titanium exhaust system, which he installed himself, the custom-upholstered seat ... but then the 31-year-old motorbike mechatronics technician breaks off from his flow. Because his Panigale is not really today's topic of conversation.

FERCHAU Automotive supported a major German manufacturer over a period of more than four years as they developed a new model. And Heger's eyes light up just as brightly when he talks about this customer as they do when he enthuses about his beloved Italian two-wheeler. Now the model that has been «eagerly awaited» by the manufacturer's customers is about to go into series production. «Our team was involved in the development from the first draft of the new engine through extensive testing and validation issues for almost all components and software applications, right up to type approval», explains Heger. «I'm really looking forward to putting the bike through its paces on the road soon.»

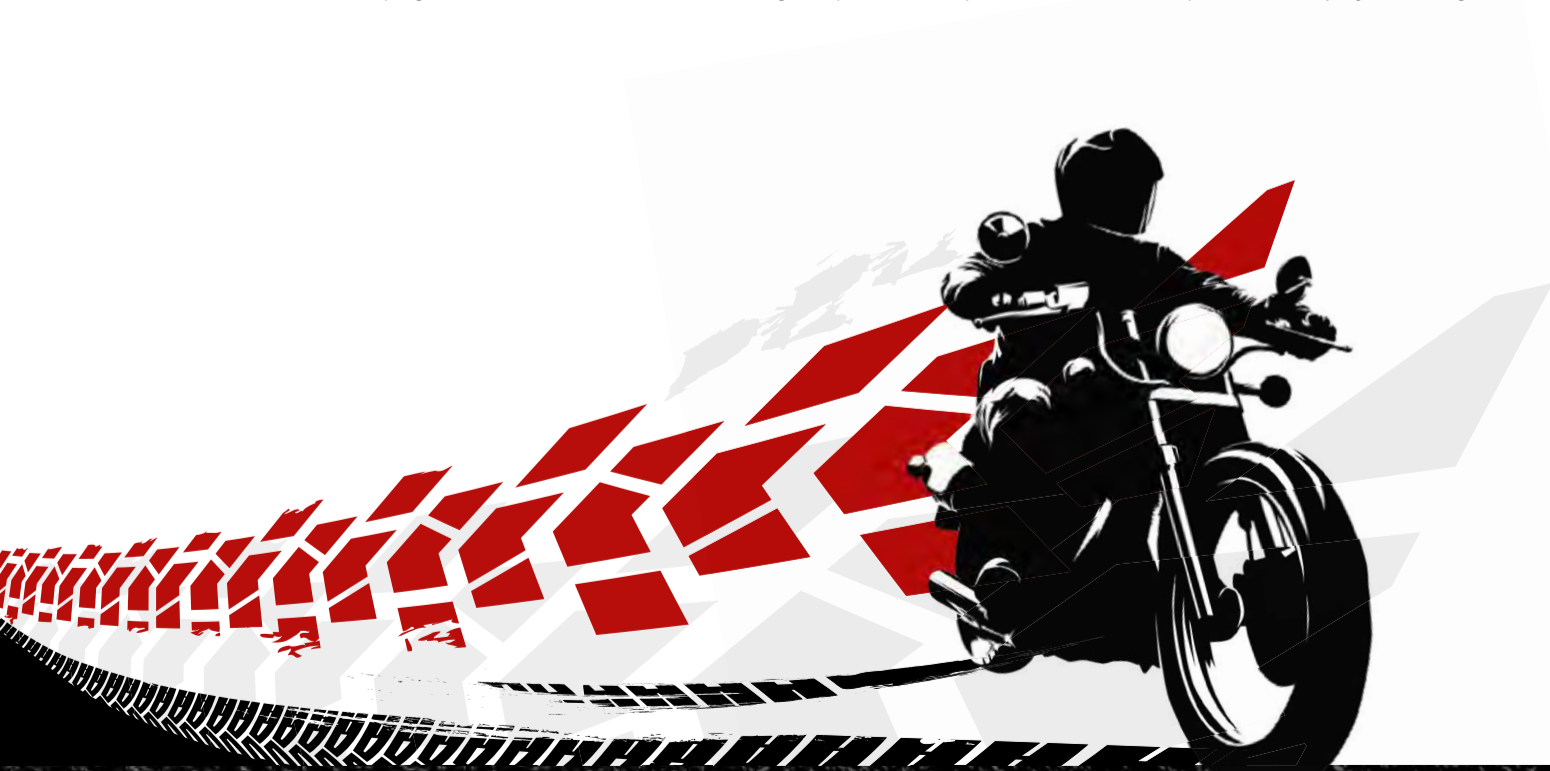
Heger and his team invested a great deal of expertise and, above all, passion. Around 35 experts in two-wheeler technology were involved in the prestigious project, from mechanical engineers to motorbike mechatronics technicians. Development services for motorbike customers are now an important area of business at the Munich site. Eight years ago, there were just two motorbike employees. One of them was Katrin Leisner, a graduate motorbike mechatronics engineer,

who built up the base at FERCHAU Automotive starting with a small project and working closely with today's major customer. She was instrumental in turning the development service provider into a leading provider of support for anything related to two-wheelers.

A crucial lubricant to ease the path to success: a passion for motorcycling. «That's what makes our team stand out: pure passion», explains Team Manager Validation Katrin Leisner, 38. «Everyone here has turned their hobby into a profession. And of course, here you also get to rave about your latest epic ride complete with your awesome lean angles. That's actually how every customer meeting starts», says Leisner with a laugh. «We are all positively crazy.» She and Kay Heger trained at BMW, the largest German manufacturer. Both have only ever worked with motorbikes. Both «burn», as Kay Heger puts it, for «that very special feeling when you sit in the saddle, start the engine and feel the power of the technology».

This passion comes through in every word when they talk about the current customer project. A beacon project in a booming market. A forecast by Statista predicts that sales in Germany will increase from €2.64 billion today to €3.27 billion by 2028. Ten years ago, it stood at just €1.45 billion. Leisner and Heger explain how the core expertise and infrastructure of the Munich branch with its engine test benches, measurement technology workshop and software expertise are much sought after. For example, Kay Heger went in surgeon-like with an endoscope to check the intake and exhaust valves in the combustion chambers via the ignition box shaft during engine development. As a result, he able to provide the customer with vital details.

The conversation then briefly swerves back to Heger's Ducati Panigale. Because a colleague at the motorbike manufacturer had told him about this «winding road in Switzerland», which was «ideal for lean angles». He really wanted to try them out. Katrin Leisner's ears prick up. «Wow, tell me all about it...», she asks her project manager.



»The heart of the matter«

Thomas Schäfer is one of the most prominent automotive managers in the industry in his position of member of the Board of Management of Volkswagen AG and CEO of the Volkswagen brand. Schäfer, born in Marburg in 1970, came into the automotive industry via a dual study programme at Daimler AG. Among his roles there, the graduate engineer, specialising in mechanical engineering, served as Chief Technology Officer and founding member of DaimlerChrysler Malaysia. Schäfer moved over to Volkswagen in 2012. He was initially in charge of the Group's »Abroad« production there, became Managing Director of Volkswagen Group South Africa in 2015 and Chairman of the Board of Management of Škoda in 2020. Thomas Schäfer has been a member of the Group Board of Management, CEO of the Volkswagen Passenger Cars brand and Head of the Core brand group since mid-2022.

Transformation: from the industry

Volkswagen is facing some major challenges.

In an exclusive interview with MOBILITY WORLD, Brand Board Member Thomas Schäfer explains how he is preparing the company for »the perfect storm«, why the market power of the Chinese does not worry him, how he wants to inspire the digitally influenced Generation Z – and what he once learnt about global mobility at DaimlerChrysler in Malaysia.



World premiere of the new Tiguan, first in front of the workforce, then in front of the press.

Mr Schäfer, you recently presented the new generation of the Tiguan, Volkswagen's successful compact SUV. The 10,000-or-so workforce at the Wolfsburg plant got the first glimpse of the new model generation ahead of the media. That must have been what you could call a particularly lively atmosphere?

The Tiguan is not only a very important car for the brand, but also for the Wolfsburg site. The Tiguan is one of our global bestsellers. The new generation once again demonstrates absolutely everything Volkswagen stands for: quality, strong design, innovations for everyone. We made a conscious decision that the team should be the first to celebrate the world premiere. The Wolfsburg workforce puts an incredible amount of pride and passion into building the third-generation Tiguan. We always need cohesion and identification with our brand, particularly in uncertain times like these. That really was palpable in the hall. A powerful moment.

The Tiguan is the best-selling model in the entire Volkswagen Group. So a model presentation like this is something of a morale-booster in times when not everything is running smoothly in the industry?

The entire automotive industry is facing major challenges. The biggest technical transformation in the history of the automobile is facing a particularly precarious environment. In my experience, the right products are all the more important when times are tough. And we deliver these with models such as the new Tiguan, the new Passat and the ID.7.

The »Digital Cockpit« in the new Tiguan is based on specific customer feedback.



It's said that the design of the interior in particular is a result of talking to customers. What specifically were customers asking for from the »Digital cockpit«?

In the first step, we illuminated the sliders, brought back physical buttons on the steering wheel and increased the size of the screen on the centre console to up to 15 inches. This allowed us to bring many operating elements back onto the top level. As an example, the seat heating can now be activated with a touch and is not buried in a submenu. And don't forget: we are now the leader in voice control in the high volume segment.

Nowadays, there is a lot of talk about the importance of a positive, seamless customer journey. User experience is one of the industry's key buzzwords. What exactly is it that the VW user wants to experience in the vehicle?

In the end, we are all looking for the same thing: firstly, a car that I can operate easily and intuitively without needing to plough through a user manual. And secondly, our customers want to use their digital world on their smartphone seamlessly in the car. Our cars must be part of people's living environment and make their lives easier.

On the subject of dialogue with customers, more than anything, they want small, practical electric vehicles that they can afford. That's certainly not the Tiguan. This is a hybrid vehicle that costs significantly more...

Our customers have a wide range of needs. Of course, this includes affordable electromobility. We will be delivering this from 2025 with the series version of the ID. 2all for less than €25,000. We also have firm plans for what an electric car for under €20,000 should look like – a Volkswagen in the best sense of the word. However, some customers require significantly more space. Or perhaps they are not yet fully won over by electromobility. And the Tiguan eHybrid with an electric range of more than 100 kilometres is a great everyday runaround.

The press were able to experience the new Tiguan after the employees had their preview. And the general consensus about the Volkswagen model range tends to be that the brand lacks a truly attractive electric car.

The previous ID.3, ID.4 and ID.5 models looked quite dull overall. What do you think?

Our ID.7 has just been voted »German Car of the Year«. The ID.3 has undergone a comprehensive product upgrade and has since won many comparative tests. ID.4 and ID.5 have received a major upgrade – with a completely newly developed infotainment and software generation as well as a new drive for more power and efficiency. The ID. 2all demonstration car embodies how we see our electric people carrier for under €25,000. And we showed at the IAA in Munich just how emotional and sporty electromobility can be with the ID. GTI Concept. I would say that is the exact opposite of dull. Both cars also incorporate the first elements of our new design language. I am more than confident that the revised and new e-models from VW will be hugely successful. ▶▶

Transformation: from the industry



The ID.7, the largest ID model to date



ID. 2all – the electric vehicle Volkswagen plans in the compact car segment.

The sales figures are not bad, but they are lagging far behind those of Tesla. And now the Chinese are muscling into the European market with a range of attractive models. How do you intend to compete in the e-market?

Competition is a good thing, it makes us all better. The market environment is changing, we have to take this seriously and we are doing so. Tesla has brought a new way of thinking to our industry and the Chinese manufacturers want to take the European market by storm. We just have to get faster and better. We are increasingly focussing on partnerships in China and have agreed to work with Xpeng, among others. This also makes sense, because we need a higher development speed for local vehicles in China, even more so than in other markets. This is particularly the case when it comes to software and digital features.

It's true that the general situation is challenging. In the summer, you spoke of the »perfect storm« that was brewing. »The roof is ablaze« was another statement you made, recognising that competitors are earning significantly more than Volkswagen in the high volume business. How are you preparing for this storm, or how are you going to put out the fire on the roof?

By doing our homework. On the one hand, we have sharpened our brand essence and strengthened the product substance with quality in every detail, innovations, a new design and intuitive operation, just as our customers expect from us. In other words, 100 % Volkswagen on all fronts. Secondly, we are also getting Volkswagen up to speed in economic terms. We have set up a comprehensive performance programme for this purpose. We have to increase our earning power in the long term. This forms the basis on which we can continue to invest in technologies, the best products and our workforce.

Looking further ahead, where do you see the VW brand in, say, ten years? What will be the bestseller?

A fascinating question. The automotive industry will change more in the next ten years than in the past hundred. I am sure that Volkswagen will continue to play an important role in this industry. As a brand in and for the core of our society. By the way, the Golf, T-Roc and Tiguan will continue to be our bestsellers as the brand's own core products – albeit electrically powered.

You were in close dialogue with customers when designing the new Tiguan. In ten years' time, you will be in discussions with today's Generation Z, with digitally influenced people who recognise climate change as the most urgent issue. When they say, »I don't want a compact SUV, I want a small electric car with cool apps that I don't have to own but that I can book at any time,« what is your answer to this?

Our role is to offer the right kind of mobility service to suit all of our customers. For example, the Volkswagen AutoAbo already lets you book an ID.3 or ID.4 today for a specific

period. We have established an integrated mobility platform in the Volkswagen Group where we will offer our customers customised services post-rollout. As I said: people's mobility needs are different. We provide the right answers.

Volkswagen shaped an era and a generation with the VW Golf. The Golf was and remains an icon, but will be 50 years old in March. What gives a model iconic status?

The Golf defined a vehicle class of its own with its design, equipment and technology, and even gave its name to an entire generation. That's as good as it can get in the automotive industry. We have continued to develop this model over eight generations. The Golf remains what it has always been – a car that suits everyone in the best sense of the word. Timeless, classless – simply Golf.

Will the icon also be available as an electric version?

Yes, the Golf will continue to play a central role for Volkswagen and our customers in the electric age.

Is it not time to create a new icon? Forgive the suggestion, but isn't the VW brand rather like a superband that has been popular around the globe what seems like forever and still sells out stadiums, yet hasn't had a proper hit for years? Does the analogy make sense to you?

A brand like Volkswagen has to win people's hearts. It has to be approachable, emotional, likeable. Be part of the family. Maybe we've lost sight of this somewhat in recent years. We are working hard to hit the heart of the matter with the new models that are now coming to customers.

What would a proper hit for your brand look like, do you think?

The series version of the ID. 2all – our small electric car that will be launched in 2026 – has what it takes to top the charts. Compact, affordable, a bold design, plus top-of-the-range infotainment and user experience.

It would have to be a hit that does not just grab people in Germany or Europe, but in the USA and China as well. Is there such a thing as a world car?

Needs in different regions of the world differ, sometimes fundamentally so. There is no such thing as »one-size-fits-all«, in other words one car that's right for all markets. Our approach is to use joint platforms to fulfil disparate customer requirements worldwide in the best possible way. We have development departments and plants all over the world. At the same time, we ensure that the brand essence, design and quality standards are a fit everywhere. Our customers must be able to rely on it: if it says VW on it, there's VW in it – whether it's in Europe, China or America.

You yourself have held management positions in the automotive industry in many regions of the world, including South Africa, Malaysia and the Czech Republic. What did you personally learn there about people's mobility behaviour?

Mobility is a basic human need. It's the same whether you're in Europe, Africa, Asia or America: mobility enables social participation, economic advancement and personal freedom. The specific configuration differs from region to region of the world. In my experience, cars continue to exude enormous charisma and attraction. We want to make automobility accessible to the masses. It must be safe and sustainable to achieve this. That is our pledge as the Volkswagen brand. //

TALK of TOWN

E for an »End to the waiting«



Affordable electric cars incoming! Citroën makes a start: The French manufacturer's new ë-C3 could be the most significant European-produced model of 2024. This is because it is seen as the first affordable electric car with a reasonable range of around

320 kilometres. Prices start at €23,300, less the e-car subsidy of up to €4,500. More e-bargains to follow: Fiat, part of the Stellantis Group just as Citroën is, aims to offer the classic Panda small car in an electric version at a similar price this year. Renault, for its part, is launching the new R5 E-Tech for around €25,000. The even more affordable Legend small car model will then follow in 2025. Volkswagen plans to offer the ID. 2all for less than €25,000 from 2026. The Model 2, the entry-level electric car from US manufacturer Tesla, will also arrive then.

Know-all on board



It was the hot topic at the CES technology trade fair in Las Vegas at the beginning of the year: artificially intelligent voice assistance. **Volkswagen, for example, announced that it would be offering »ChatGPT«, the AI-based chatbot in all vehicle models with the IDA voice assistance system in future.** The VW Group brand Škoda will also integrate ChatGPT into some model series from the middle of the year. Mercedes-Benz had already started to offer ChatGPT-based services in its vehicles last year. And the Stellantis brands DS and Peugeot have now also announced that they will be offering the chatbot developed by the Californian AI company OpenAI in their vehicles.

Amazon car dealership



Hyundai is the first brand ever to offer cars on Amazon: The Korean manufacturer and the online mail order company have entered into a co-operation that could be groundbreaking for the car trade of the future. American Hyundai dealers will initially be able to list their cars on Amazon. You pay in the same way as you do when you buy books or coffee machines, following the usual Amazon model. The vehicles are then collected from the nearest dealerships. **The Hyundai-Amazon deal demonstrates that it is not only automotive development, but also car purchasing that is undergoing fundamental transformation.** Popular electric brands such as Tesla and Polestar no longer even operate car dealerships. Traditional manufacturers are also revolutionising their car retail network. Leasing contracts for Mercedes-Benz, for example, can be finalised completely digitally.

Pilates at the filling station



Charging time is waiting time – even if new fast-charging technologies are increasingly speeding up the process of »refueling« electric cars. **Many manufacturers offer their customers extra experiences in newly designed »charging lounges« or »charging hubs« at fast-charging stations.** The idea: not only to charge the batteries of the electric cars, but also the energy reserves of the occupants. Audi, for example, has already opened five charging hubs in Germany, Austria and Switzerland – Lounge-like design stations where customers can relax and wait, provided with Wi-Fi and snacks. Porsche also recently opened its first »Charging Lounge« in Bingen at the A 60/A 61 motorway junction. Snacks and drinks are also available here. And pilates workout programmes are offered on multimedia screens.

In the Year of the Dragon



Faster, more digital, more efficient – and preferably cheaper too. China is setting new standards for the automotive industry. The country is not only by far the largest car market in the world, but has also recently become the largest global car exporter. This poses completely new challenges for German manufacturers and suppliers.

Production of the Santana model began at the Shanghai Volkswagen Automotive Company in autumn 1984. The components arrived in the Chinese metropolis wrapped in oiled paper and packed in boxes, and were then assembled into a car on site. At the time, Carl Hahn was CEO of the Wolfsburg-based car manufacturer, and entering the Chinese market was one of the biggest decisions he made. VW quickly became the best-selling car brand there – and remained so for decades, until the first quarter of last year: Volkswagen found itself overtaken by BYD. This was a company founded in 1995 in Shenzhen as a battery manufacturer. It has also been producing cars since 2003 and is now one of the world's leading electric car manufacturers.

Transformation: from the industry

According to the forecast, sales in China will rise to around 28 million cars in 2030 (currently around 24 million). And everything points to the fact that local automotive companies in particular will reap the benefit of this growth. Another prediction is that around 65 % of these new cars will be vehicles from Chinese brands – and predominantly electric vehicles. The top ten most successful electric car companies on the Chinese market already feature only two import brands: Tesla in second place (around 15 % market share) and BMW in ninth place (around 2.1 % market share). BYD heads the leader board (25 %).

Things are likely to become even more challenging in the future for OEMs that do not hail from China. And this is not because Chinese customers generally favour domestic brands, but because Chinese cars are much more tailored to their needs and wishes. Temperature sensors on the rear seats that indicate when the baby needs a nappy change; rotating screens that can be used in portrait or landscape format; seamless networking of the car and mobile phone – for video calls and other similar digital functions, for example. Chinese customers value being fully provided with technology.

What's more: the target group for new cars in China is significantly younger than in Europe. A study by consultancy firm Roland Berger and the Chinese Autohome Research Institute reveals that more than a quarter of all new car buyers in China are under the age of 30. The average age of a Mercedes-Benz owner in China is under 36, while the average age in Europe is over 50. Women also form a comparatively high proportion of new car customers at 34 %. This group appreciates unconventional design, sophisticated equipment and financing plans with low monthly instalments. They also want



The Chinese version of the new VW Santana.
The Santana was the first Volkswagen model ever to be produced in China.

The change in ranking is not solely the result of the usual competition for sales figures and market share seen in the vehicle industry. It also marks a fundamental change in the automotive world. **«China is well on the way to becoming an automotive superpower»** says automotive expert Fabian Piontek from the management consultancy AlixPartners. »The era of record profits for German car manufacturers is coming to an end. Companies only have a few years left to adapt to the disruptive nature of the competitive situation with an even more resolute transformation.«



大众汽车(安徽)有限公司

assistance systems of all kinds. Future Generation Z customers have »grown up with the internet and artificial intelligence and therefore have a liking for new technologies«, says Xu Changming, deputy director of the Autohome Research Institute. He estimates that by 2030, around 35 % of Chinese car buyers will have been born after 1995.

The often cited customer focus could become vital for the survival of German brands in particular in China. **»Electromobility and digitalisation in particular have radically transformed customer needs in China«** says Ralf Brandstätter, the member of the Volkswagen Board of Management responsible for business in China, recognising the trend. »We need to tailor our products to Chinese customers more than ever before – and get them on the road even faster.« With this in mind, the Volkswagen Group opened a new development centre in Hefei, China – the largest one outside Germany – at the beginning of the year. »China has become our fitness centre«, said VW CEO Oliver Blume at a recent conference.

Traditional automotive companies need to realign their strategy and products if they are to prevent the China adventure from turning into a calamity – and do it fast. Other German OEMs such as BMW and Mercedes-Benz are also highly dependent on China and have recently lost market share there.

So they are also under pressure to act. »China is absolutely at the centre of our next wave of the electric offensive, which will begin in 2025 with the new e-architectures«, says Mercedes-Benz CEO Ola Källenius. »We have to master the electric drive just as perfectly as digitalisation. Our customers expect nothing less.«

It is not just in China, but the software and the associated functions of a car are becoming a key purchasing criterion worldwide, as a study by management consultants MHP revealed. Worldwide, 73 % of respondents say this; in China the figure is 96 %, whereas in Europe it is 66 % and in the USA 67 %. »There is no doubt that European manufacturers need to improve significantly in developing software-based vehicle features. As well as the purely technological aspects, it's also about catering to the customer's specific preferences – and installing a karaoke-capable microphone, for example«, says Marcus Willand, Partner at MHP.

New customers, new requirements, new business relationships – a number of suppliers also have to come to terms with this. On the one hand, companies are facing new competition from Chinese companies, while on the other, Chinese OEMs are becoming increasingly important for German suppliers. They buy components, but above all they drive innovation. **»Chinese car manufacturers are also extremely tech-savvy and are adopting new technologies earlier than others, while developing at a high speed«**, said Stephan von Schuckmann, CEO of the German ZF Group, recently. The first customer for ZF's steer-by-wire steering system, for instance, was the Chinese car manufacturer NIO. Bosch supplies assistance systems to the SAIC Group and Xpeng, for example, while Changan and Leapmotor are among those for whom Continental produces brake and traction control systems.

The high-tech components from established supplier companies are a significant factor in making Chinese electric cars attractive worldwide. China's car manufacturers are therefore pushing ahead with their expansion into other markets on a massive scale. »We want to become the leading international manufacturer in Germany«, says Michael Shu, European head of BYD. The group is a prime example of the up-and-coming Chinese automotive industry. There is a constantly growing list of brands that aspire to gain a foothold on the European market: Human Horizons, Zeekr, Leapmotor, Xpeng, Great Wall Motor – all of these have announced their market launch in Germany for this year.

Electromobility serves as a launch pad for them. This is no coincidence, as the Chinese OEMs have an advantage when it comes to the most important component of an electric car: the battery. **More than two thirds of all battery cells are manufactured in China.** BYD started out as a battery manufacturer – and now dominates

the electric car market. China's largest battery producer CATL is planning something similar. The Avatr 12 electric saloon – a joint venture between CATL, smartphone manufacturer Huawei and car manufacturer Changan – was presented at the IAA Mobility in Munich last September.

Technology-wise, the new models have nothing to hide. This is also shown by the example of NIO. However, the manufacturer still wants to establish the principle of battery swapping, originally an idea of the Israeli start-up Better Place. The empty battery in the vehicle floor is



The Avatr 12 electric saloon is a Chinese newcomer on the car market.

automatically exchanged for a full battery in a matter of minutes in special exchange stations. China already has more than 1,100 such swap stations. There are currently eight in Germany, with a total of 50 planned. Nio has been working with the Geely and Changan groups to develop the infrastructure since last year.

The Chinese industry has also made significant advances in terms of safety. As proof: in 2022, two Great Wall Motors models performed better in the Euro NCAP crash test than all other vehicles in this class. This generates trust. The former British brand MG Motor, which is now part of the SAIC Group, is currently the fastest growing brand in Germany. MG Motor recorded just under 20,000 new registrations in Germany last year. Far more than established brands such as Honda, Alfa Romeo, Mitsubishi or Jaguar. And 2024 is the »Year of the Dragon« in China – symbolising power, luck and determination. //



At the beginning of the year, the Volkswagen Group's largest development centre outside Germany was opened in Hefei, China.

Transformation: from the industry

Golf stories

No other car has been as popular and widely owned in Germany over the past 50 years as the VW Golf. And that's why almost everyone has had their own »Golf story« since the compact car was launched in spring 1974 as the successor to the legendary VW Beetle. We asked FERCHAU Automotive employees about their personal experiences with the bestseller from Wolfsburg.



Kerstin Schniers, 36,
Team Manager HR at
FERCHAU Automotive,
Wolfsburg branch



When the handbrake cable snapped



»In the summer holidays of 1987, when I was ten years old, we went to Yugoslavia, to the holiday resort of Gradac, now part of Croatia. We lived in Bad Kreuznach at the time, so it was a car journey of around 1,500 kilometres. We – my father, my mother, my sister and I – set out in our Golf, a red three-door second generation model, built in '84 or '85, I can't remember exactly. We took the route over the Wurzen Pass, and I remember that it was slow going, as the border crossing from Austria to Yugoslavia was right at the top. And in the middle of all this stop-start, on gradients of 18 per cent in places, our car's handbrake cable snapped. Of course, there was a lot of consternation, especially between my parents. But all that didn't do any good, we had to carry on up. We finally made it – clutch grating, high revs and probably in a cloud of burnt rubber. The onward journey to Gradac then went without a hitch. Once there, my father, who is a master mechanical engineer and knows all about technology, got hold of a handbrake cable and installed it himself. For me as a ten-year-old, that was a thrilling car experience that I still remember clearly to this day.«

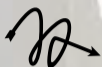


Christian Bürger, 47,
Division Manager at FERCHAU Automotive,
Stuttgart South branch





A DODGY FAIRY TALE SUMMER



»My golf story is set in the fairytale summer of 2006. I was 19 years old at the time, living in Uelzen in Lower Saxony and had recently broken up with my boyfriend, who I had been with for four years. A few weeks later, he called me – we were still on very good terms – and asked me to pick him up from a training course in Lübeck. He had asked me to take his favourite car: the Golf III VR6 in »Dusty Mauve Pearl Effect« paint finish, a shimmering dark purple. »Yes, I'll do that«, I said, and set off with a mate to pick him up. We were on our way to Lübeck, on the motorway, outside lane, doing about 180 I would say. There wasn't much traffic, but all of a sudden another car pulled out into the outside lane without indicating. I slammed on the brakes, the Golf skidded away, spun and crashed into the nearside barrier. The other guy just drove off, leaving us sitting – fortunately unhurt – on the hard shoulder in a total wreck. My ex-boyfriend freaked out, of course, his pride and joy had been totalled. He then dismantled the car and sold the individual parts that could still be salvaged, such as the fan manifold. We never did get back together...«



»My husband and I bought the Golf V 'Goal' special edition in 2009. It was a pretty spontaneous decision. The car was attractive, had a 2-litre pump-injector TDI engine and came in mouse grey. At first, it was mainly my husband who drove it, but then my job situation changed and I had to commute around 90 kilometres each way to get to and from work. That's when I took over the Golf, simply because it was much more sensible in terms of fuel costs alone. The car just soldiered on and on. There was once a fault with the air conditioning. But apart from that, the car never had a problem. Then it was time for another MOT. The Golf was perhaps six or seven years old at the time and had 489,000 kilometres on the clock. But then the garage called: »The shock absorbers need changing.« New shock absorbers including installation, inspection and MOT – it would all have cost more than the car was worth – so we sold the car, just as spontaneously as we had bought it. We continued to drive a Golf after that, but we never had another model as reliable as this one.«



Dorrit Isensee, 59,
Team Coordinator Back Office
at FERCHAU Automotive,
Wolfsburg branch

Mouse-grey
reliability



Exclusive Upgrade
with jam and
cotton wool



»I have got loads of Golf stories to tell, because my husband worked at Volkswagen and we used to drive nearly-new cars, including several Golf models. The best story is from 1991 though, when we got married. We bought a white Golf Cabriolet especially. When we rolled up to the church wedding in this car on a bright summer's day, it looked beautiful. The roll bar was decorated with white roses and a bouquet of flowers was attached to the bonnet. We had already used the car two days earlier to get to our civil wedding ceremony in Helmstedt. While we were in the registry office with a small party of friends and family, my sister and our friends had covered the car all over with cotton wool balls while it was parked on the

market square. They had used jam as glue. My newly-wed husband and I came out of the wedding room and he froze when he saw our beloved convertible. He knew that jam was not good for the paintwork. While I sat happily with our family and best man afterwards, my husband took the car through the car wash and then gave it a thorough polishing. Quite rightly, as it turned out, because the jam had actually left lots of small stains on the paintwork. If you weren't looking for them, you could easily miss them – but they were there. That's the turbulent way our marriage started – but we are still happily married today and often laugh about this episode.«



Regina Sauer, 57, team secretary
Electrics/Electronics at FERCHAU Automotive,
Wolfsburg branch





Brownie points for AI

Generative AI can achieve astonishing results in **Deep learning processes**. The programs just carry on independently. This opens up whole new opportunities for the car industry – but comes with serious caveats.

Transformation: from the industry

On 30 May last year, the US »Center for AI Safety« in San Francisco published an appeal that consisted of just a single sentence and reads: »Mitigating the risk of extinction from AI should be a global priority alongside other societal-scale risks such as pandemics and nuclear war.«

Exaggeration? Hysteria? Probably not, because 600 AI luminaries have signed this appeal. These include Sam Altman, CEO of OpenAI, the company that developed ChatGPT, Demis Hassabis, CEO of Google DeepMind, and Dawn Song, computer science professor at Berkeley. The manifesto shows two things: Firstly, that artificial intelligence harbours massive potential dangers. And secondly, that artificial intelligence can be immensely powerful. And this power is the reason why AI has been one of the major global trends for years. Many people already use AI as a matter of course: as translation software, as a spam filter – or when the car navigation system takes into account a traffic jam or roadworks in planning the route.

AI is considered a key discipline in the automotive industry. In a recent study conducted by management consultants Capgemini among 1,000 managers from 13 countries, 94 % of participants from the automotive industry stated that generative AI (see box on this page) was a topic of discussion at board level. Since the US company OpenAI released its ChatGPT software in November 2022, the topic of AI has experienced »a massive acceleration«, says Timo Littke, partner at the consulting firm Berylls Digital Ventures. »Since then, completely new applications have become feasible – and have already been introduced to varying degrees of depth and complexity.«

The use of generative AI in creating **software code** is one example of this. The Boston Consulting Group determined in a study that generative AI could, for example, help some German car manufacturers to catch up when it comes to software. The reason: self-learning AI tools are able to independently create program code. This could speed up software development by 55 % and simultaneously reduce costs by up to 95 %.

Deep learning is a key term that describes why generative AI is so powerful and can be used so extensively. For example, tiny cameras in sheet metal presses in Audi plants support **quality control**. This is because the AI image programs detect

the finest cracks or other defects in the metal with the utmost precision and can reliably distinguish them from impurities or colour nuances in the metal. BMW, too, uses an AI language model for their »Car Expert« digital user manual. The system compiles answers to users' questions and makes them easy to understand in a dialogue.

Berylls expert Timo Littke says that AI programmes such as **ChatGPT in the car** can be envisioned to »take the user experience to a new level«. The aim is a »virtual assistant that is practical, personal and proactive« and will completely redefine interaction between people and vehicles. Littke: »Its simpler and more intuitive use also reduces distraction and improves driving safety.«

It was only at the end of last year that the EU Parliament agreed on the world's first AI law. The rules are intended to ensure, among other things, the quality of the data used to develop the algorithms. It must also be ensured that no copyrights are violated during AI development. In addition, texts, images and sounds generated by an AI should be identifiable as such. The comparatively strict European AI law could become a model for other regulations worldwide – which would significantly mitigate the risk posed by AI as outlined above.

Generative AI

... is a special type of artificial intelligence. Generative AI is capable of **independently generating new content** by constantly acquiring new patterns and information from existing data. The best-known example of generative AI at the moment is the **ChatGPT** chatbot. Unlike general AI, generative AI specialises in certain tasks, such as creating text or speech recognition. Depending on the data used to train generative AI, it can learn human language, chemistry, biology or other complex topics and respond to corresponding questions: for example, by creating images, videos, texts, code, 3D models or simulations.

What could in 10 years a car look like?

We asked four people
to outline their vision for us.



»This vehicle is a food truck that connects cultures, by offering dishes from all over the world, and is at the same time a helping hand for people who need supplies, water and food.«

Melina Sell (26)
Student (5th semester)
in Transportation Design
at Pforzheim University



Mitja Borkert (49)
Automobildesigner,
Design Director
bei Lamborghini



»A Lamborghini of the future must remain true to the distinctive design DNA that marks it out from a distance. At the same time, we must continuously exceed the expectations of our fans and customers again to achieve that wow-factor.«



»A sports car with an intelligent outer skin made of solar modules and glass. The catamaran shape of the substructure allows the airstream to glide through. The car is extremely streamlined.«

Ulf Möller (54)
Architect and designer,
known for the Bauhaus luminaire LUM



Yaron (11)
Pupil from Königswinter



»The car can fly. That's why it has wings and very small wheels, as these are only used for parking. The car has a new drive, but there is still an exhaust. There are sensors at the front that allow it to drive itself.«



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