ROADS TO Taycan

PHOTOS BY
CHRISTOPH BAUER

CHRI
STO
PHO
RUS
EDITION

Taycan

Soul of a spirited, young horse
[tay = spirited young horse]
[can = soul]

This book is limited to 2,019 copies.

Your personal
limited edition number is:

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Road map

WEISSACH 2015 — **KAUNERTAL** 2019

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Prelude

“As early as 2015, the Mission E study had defined our high expectations, which the Taycan’s standard model has now, four years later, exceeded.”

Michael Steiner, Member of the Executive Board for Research and Development, Porsche AG

48°
50′
48.581″
N
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E

Weissach

GERMANY

The genesis. There are no predecessors, no role models for the Taycan. There are just two guiding precepts at the outset of the development process: The Taycan will be 100 percent electric. And 100 percent Porsche. Emotion without emissions. The technology can be calculated. The driving pleasure only experienced. When the two start to coalesce, thus begins the age of the prototypes. The time of testing.

Early 2017. The first Taycan are hand-built. Sketches, models, and seating bucks become bodies, cockpits, and ambience. Design meets technology. The prototype construction department in Zuffenhausen is the birthplace of every new Porsche model. The 800-volt technology of the first purely electrically powered Porsche, its battery system, the complex cooling system: What the designers in Weissach imagine for the Taycan is translated into initial test cars by the specialists in Zuffenhausen in the closely guarded prototype construction department.

But life really begins at the Weissach Development Center. The first stress tests for components and vehicles. At one and the same time. The electric drive units test their limits on the test benches for high-performance engines. In the wind tunnel, merciless storms rage around and through the body, helping the aerodynamics experts carve the Taycan down to a drag coefficient value of 0.22. In the first test vehicles on the track at the development center, do they step on the gas—or amperes? They do it in unaccustomed silence, at any rate. There is no snarl and growl of a 911 GT3. A Taycan bolting through the corners with nary a sound, by contrast, is quite a novelty. The future on its way to the present.

The track is demanding, conceived and built for racing machines and sports cars. Every Porsche must submit to this trial by fire. Without complaint. On those six laps, no Taycan prototype may demonstrate weakness in its drivetrain or performance. A hurdle that must be cleared by the four-door Porsche models as well. At breakneck speed. There is, after all, a race car in every Porsche. In the Taycan, it is a heady portion of the 919 Hybrid. The World Endurance Champion and Le Mans winner did its first fast laps here as well. Those that pass the test can make their way to the world. The Taycan first conquers the rural roads around Weissach. The story has begun.

The inside angle

“There are things you simply can't see on a computer, but only in reality. Sometimes you have to make a surface mathematically ‘incorrect' to get it right in terms of effect later on.”

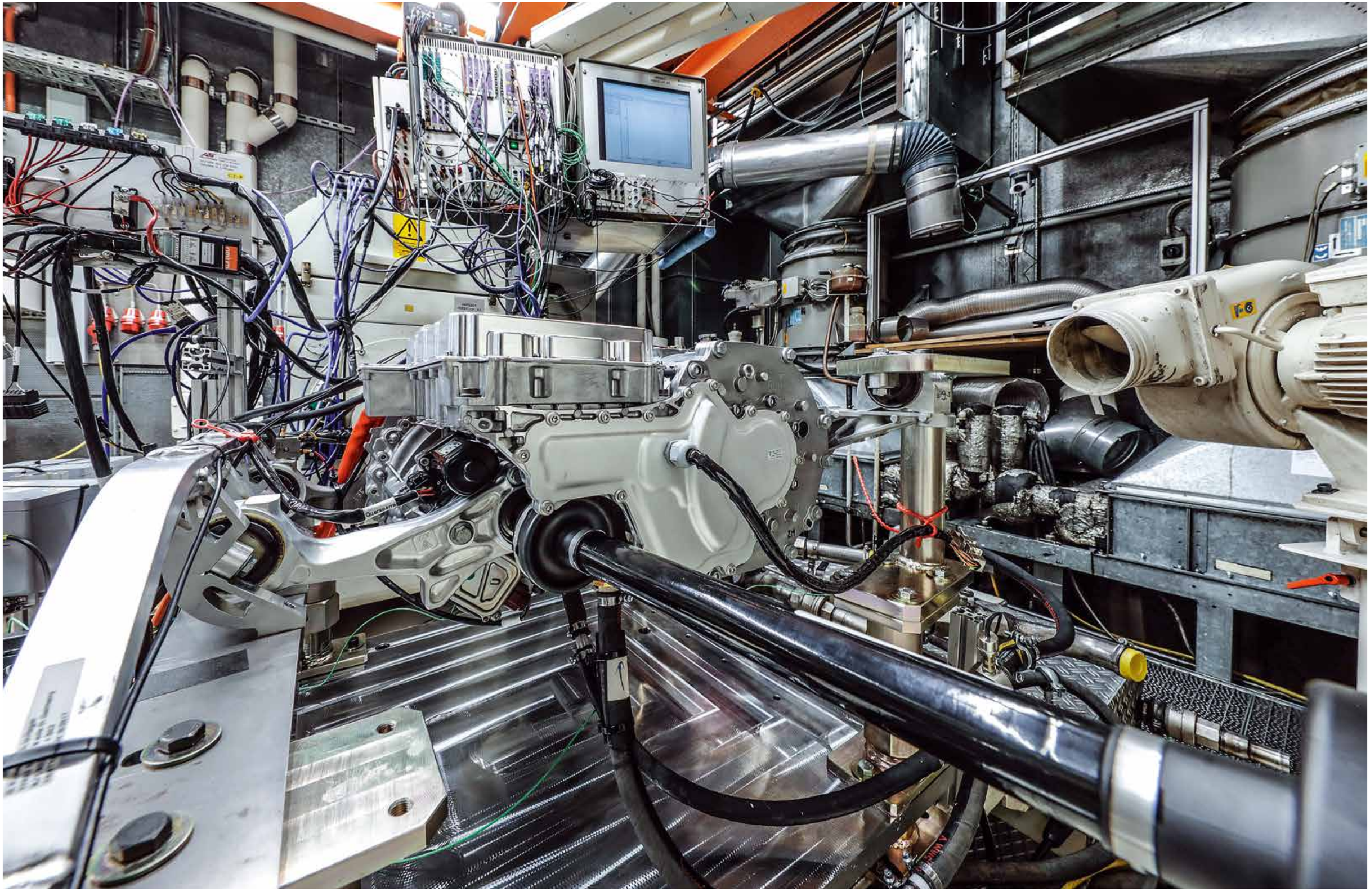
Michael Mauer, Vice President Style Porsche

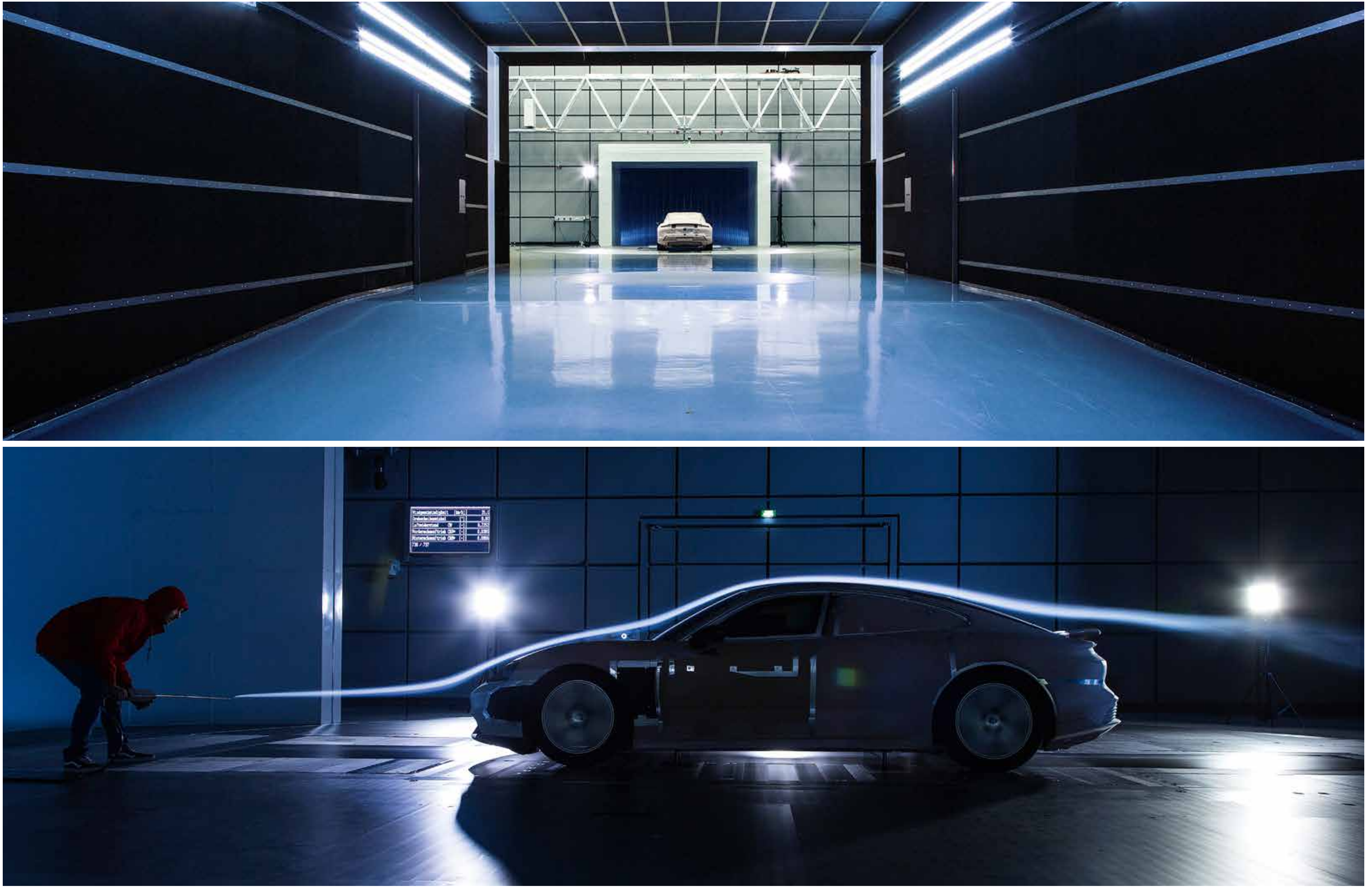

Style PORSCHE

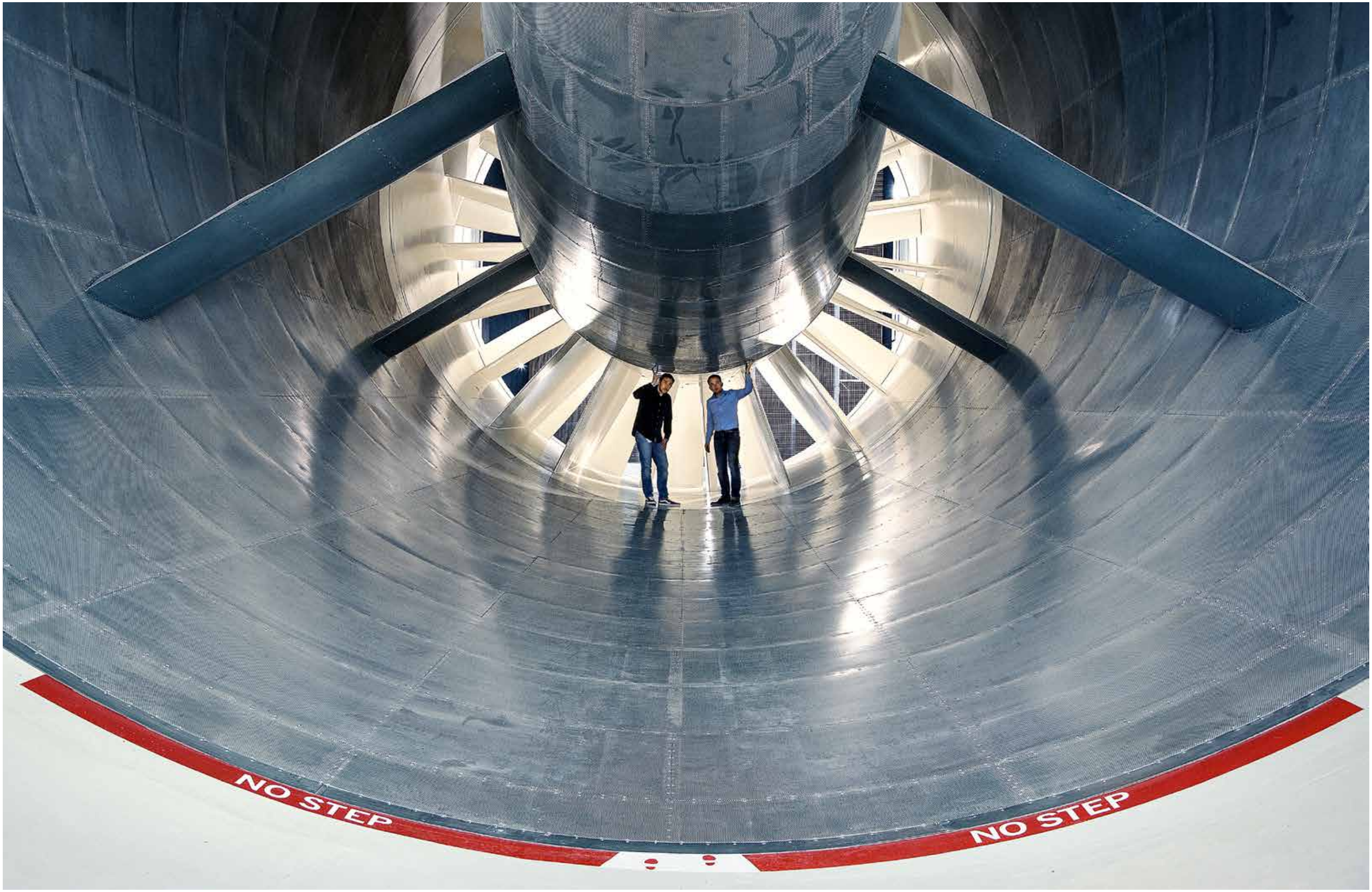
The long view

"I dare say that we have redefined the architecture of purely electric vehicles."

Michael Mauer, Vice President Style Porsche






NO STEP
NO STEP

Dialogue

"The way the all-wheel drive brings the 600 hp to the road simply has to be experienced. This car changes everything!"

Marc Webber, with Stefan Weckbach, Vice President Model Line Taycan

Surprise

“It’s amazing. I’ve never had such performance in all my years of rally racing. The Taycan moves so well; it’s really outstanding.”
Walter Röhrl

The standards

“Longitudinal dynamics are easy. The true sports-car concept reveals itself in the corners.”

Stefan Weckbach, Vice President Model Line Taycan

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23′
42.965″
S
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Upington

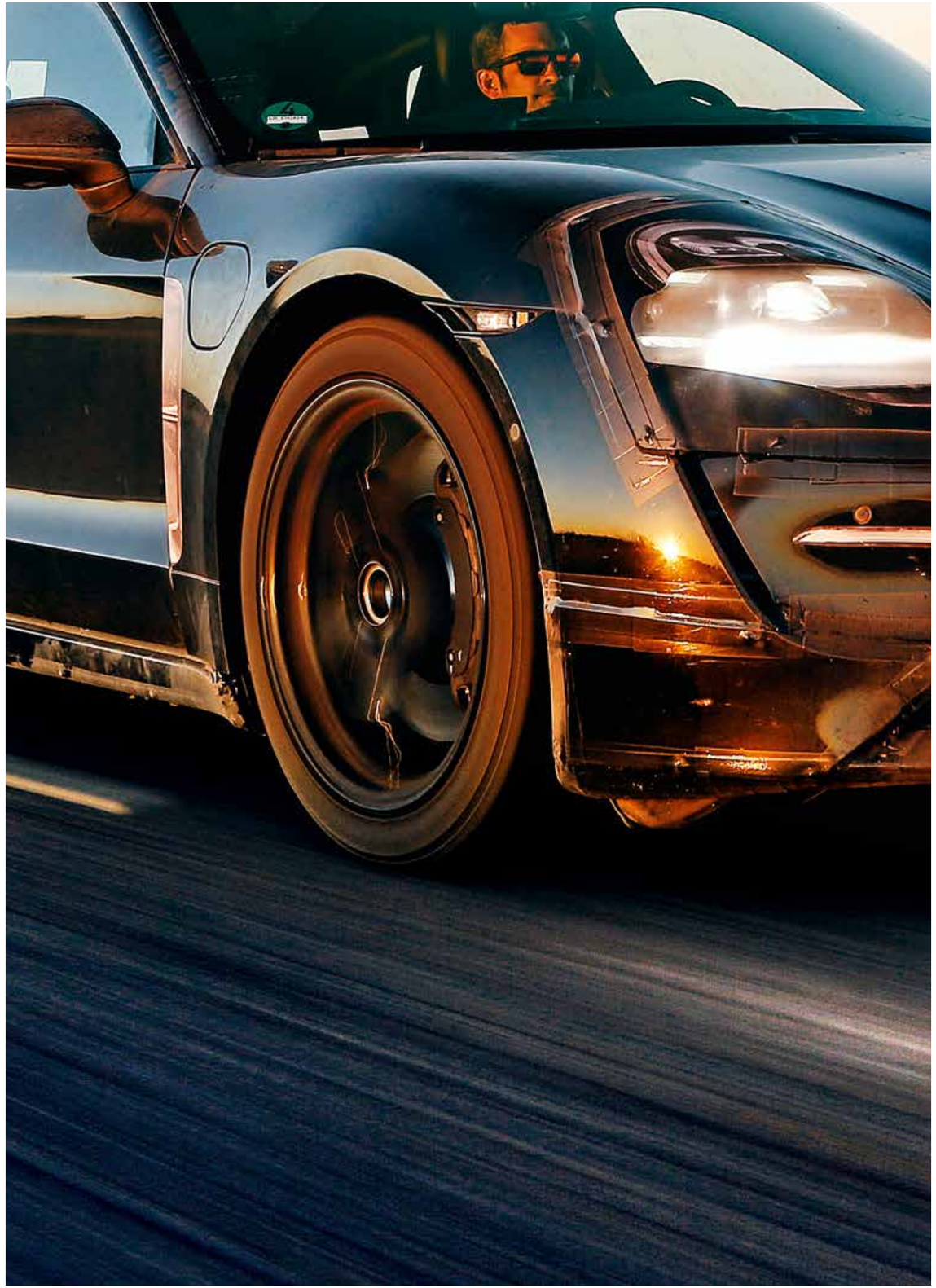
SOUTH AFRICA

The heat of January. No country does it better than South Africa. Hot-country testing in winter means saving half a year. And time is one of the greatest challenges in the creation of the Taycan. The task, after all, is not simply to develop a new model. Or a new model line. Or a new type of drive system. The task is to do it all at once. And that in a time frame scarcely longer than for the development and testing of a new 911 generation.

Porsche invented block testing to meet the challenge. The new concept says: multiple departments share one prototype, coordinate with each other, test together. Solve problems together. Issue in the morning, solution by day's end. Time-saving, material-saving, efficient. In short, typically Porsche.

The standards remain the same. The Taycan Turbo has to do every bit as well in the searing heat of the Kalahari as the 911 Turbo. At temperatures north of 40 degrees Celsius, the Taycan's batteries and electric motors require a sophisticated cooling concept. More than sixty Porsche developers are on hand with twenty-one camouflaged prototypes—with daily high temperatures around 40 degrees Celsius proving a challenge for the team and the machine in equal measure. Particularly for the Taycans with the yellow stickers on the hood. Their task is high-speed testing in the sweltering heat. South Africa has opened up a section of the N14 near Pofadder, fifty-five kilometers in length, for speed trials at up to 250 kmh for just that purpose. Permitted with official authorization only. But even in the middle of who-knows-where, the testers have to reckon with opposing traffic. And that means keeping left at all times. South Africans have the steering wheel on the right. It comes to approximately forty thousand test kilometers.

Heat, dust, and arid conditions are not all the Taycan needs to be prepared for. There is yet another discipline in which the electric sports car has it harder in South Africa than, say, a 911: there are no electric charging stations in the Kalahari. E-mobility has not reached the Cape—yet. So the testing team simply brings the charging pedestal along for the trip. Fed by a diesel generator on the bed of a truck. Testing represents exceptional circumstances in everyday life.



Changing of the guard

The recovery phases are short for the Taycan. And for the testers. Driving during the day, tinkering by night. The drivers and mechanics take turns.

Heat

“Heating up and cooling down: an extreme challenge for the Taycan’s thermal management. And for that of the team.”

Steffen König
Project Leader Body Taycan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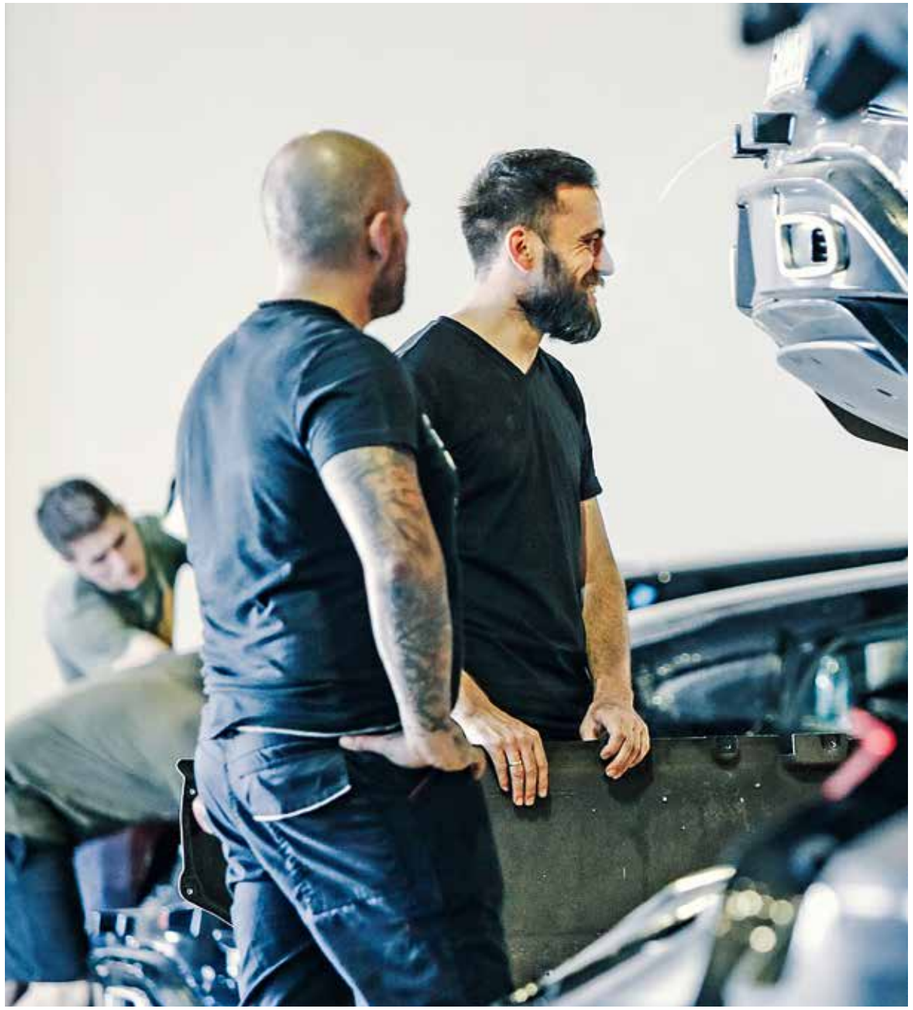


Sprint

"The road surface in South Africa is rough. When accelerating full-on, the Taycan was kicking up rocks."

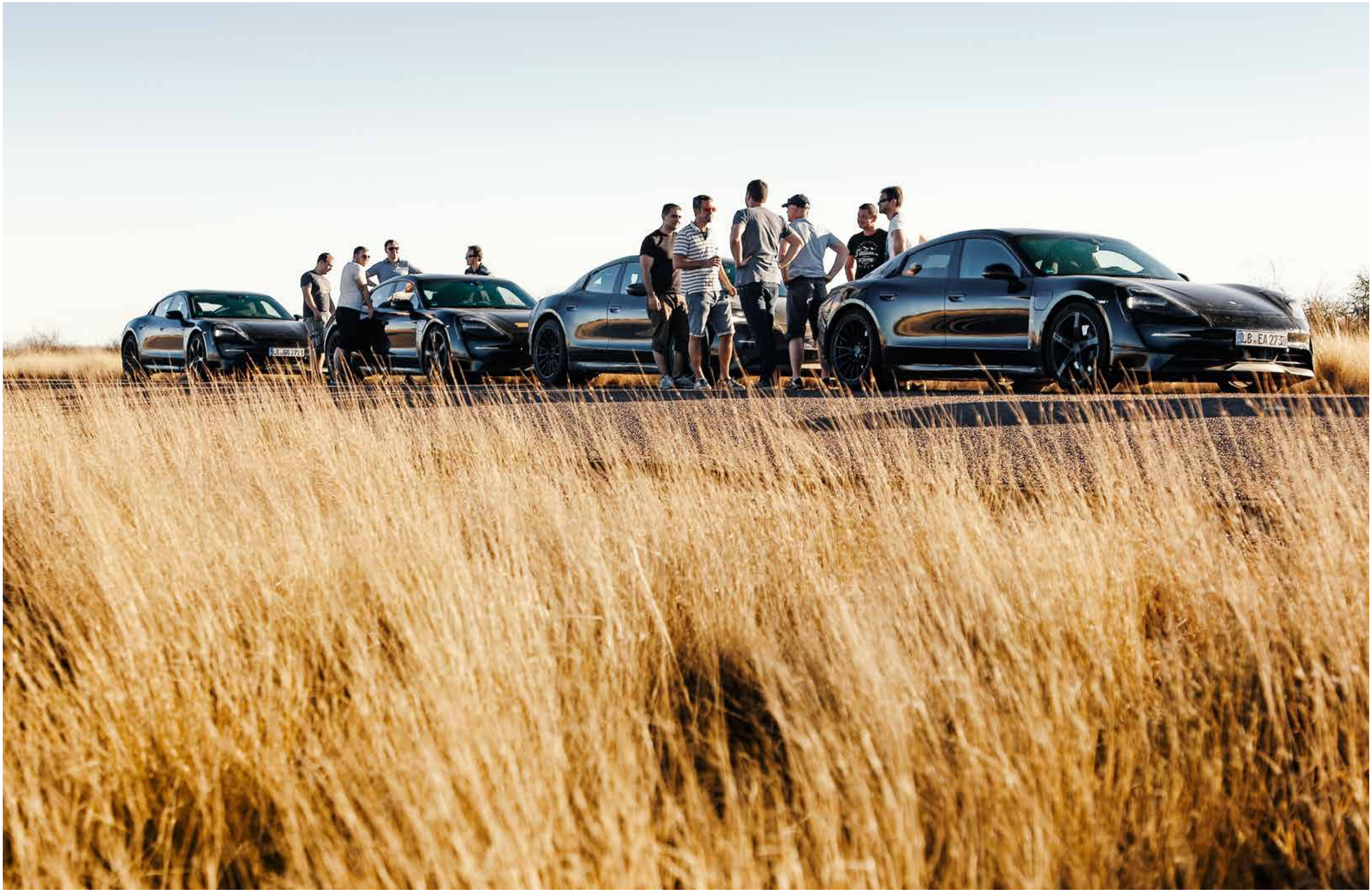
Tobias Roulet, Head of Drive Application Taycan


LB EE 2610

Stress test

“The earlier errors occur, the better. When problems arise, you have the chance to resolve them. It's worse when a car is on the market and problems start showing up.”

Oliver Blume, Chairman of the Executive Board, Porsche AG




CAUTION
Only Authorised vehicles for speed testing for next 55km
250
WAARSKUWING
Alleenlik Gemagtigde voertuie vir spoed toetsing vir die volgende 55km

Precision

Screws for the desert. Replacing parts is the program. Heat and dust at 250 kmh separate the wheat from the chaff in fast-forward.

Emotion

Testing is like endurance racing: the pit squad is on pins and needles every time the car goes out. If the car safely reaches the destination, tension gives way to euphoria.

Teamwork

"It was clear to everyone that the Taycan was a special project. Every department sent their best and most motivated people."

Robert Meier, Project Leader Complete Vehicle Taycan


LB EA 2929
LB EH 2824
LB EE 2630
LB EA 2730

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Nardò

ITALY

Pedal to the metal. Flooring it. The Pista di Nardò was made for this. The fastest circuit in the world. A circle with a diameter of four kilometers that can be seen from outer space. The record for electric cars here is 370 kmh, driven by the Japanese research vehicle Eliica. But the Taycan is no research vehicle. It is a sports car for everyday life. One capable of quickly and reliably completing even long trips. This is the acid test in Nardò. As it is for every Porsche.

Half of the development and testing team is familiar with the process. Specialists who brought the 918 Spyder to the road. There is a lot of super sports car DNA in the Taycan. The aerodynamics engineers in particular are looking forward to the marathon. Together with designers, they have tweaked the Taycan—down to the slightest curve on the front end. A collaboration that was closer, more enduring, and more intense than any that came before. And a complete success.

The active aerodynamics system has to prove repeatedly, on the track, that it selects the right configuration for the respective speed and driving profile. With greater downforce at very high speeds and when changing lanes. The rear end can never dance to its own tune, even if the driver switches off the stabilization program. With the lowest-possible drag at travel speeds. Maintaining speed without accelerating. Coasting à la Porsche in a new dimension. The marathon settles the point: aerodynamically the Taycan is an ace. Low consumption, high stability, and fit for the long haul. The Taycan is number one in endurance. By a long shot. And that lead was actually extended in a later endurance test-drive in Nardò: in August of 2019 the Taycan covered 3,425 kilometers in twenty-four hours, at speeds ranging from 195 to 215 kmh.

At times the way there was gritty and dusty. Even before the first prototype was built, the aerodynamics engineers commandeered the handling circuit in Nardò to test whether the entire cooling module could not be installed in the rear. Tested in a sawed-off, shortened Panamera, reconfigured and built with the Taycan footprint. Charging was done on one of the first prototypical 800-volt charging pedestals outside of Weissach. After five days on the dust track it was clear: it works. But the space was reassigned. To the luggage compartment.

Easygoing

Nothing to report.
The best news for the Taycan development team in Nardò.


Soul, electrified.
LB EG 936
Soul, electrified.

Endurance test

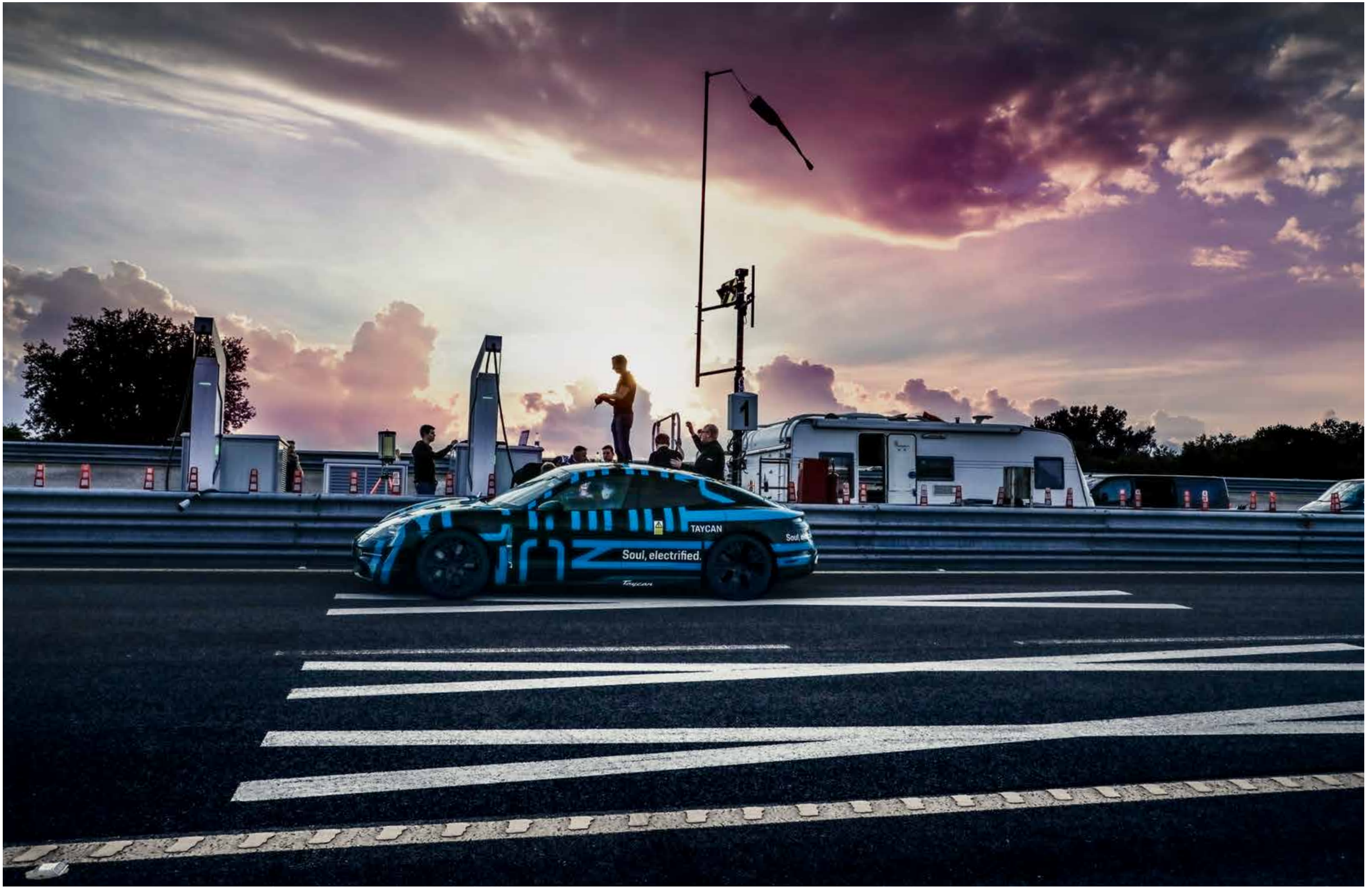
The drivers change; the car remains the same. Even after 911 kilometers.


RELLI
Brembo
RC RACING
sparco

Coasting

“The drag is sensationally low. When you let off the gas, the car just keeps rolling—even at high speeds.”

Robert Meier, Project Leader
Complete Vehicle Taycan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TAYCAN
Soul, electrified.
Taycan

Monitoring

The vital functions of the Taycan are continuously monitored and recorded. A log of success for the J1, as the Taycan is known in the development code.


Soul, electrified.
LB EG 936

Master charger

Turbocharging for the marathon. Thanks to 800-volt technology, a ten-minute charging stop is good for over two hundred kilometers. And back to the track.


Soul, electrified.
LB EG 936
TAYCAN
Soul, electrified.

Finale

"Everyone has invested a lot of energy and elbow grease. In the end you're absolutely proud of what you've accomplished."

Bernd Propfe, Project Leader Platform Taycan

66°
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1.591″
N
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E

Lapland

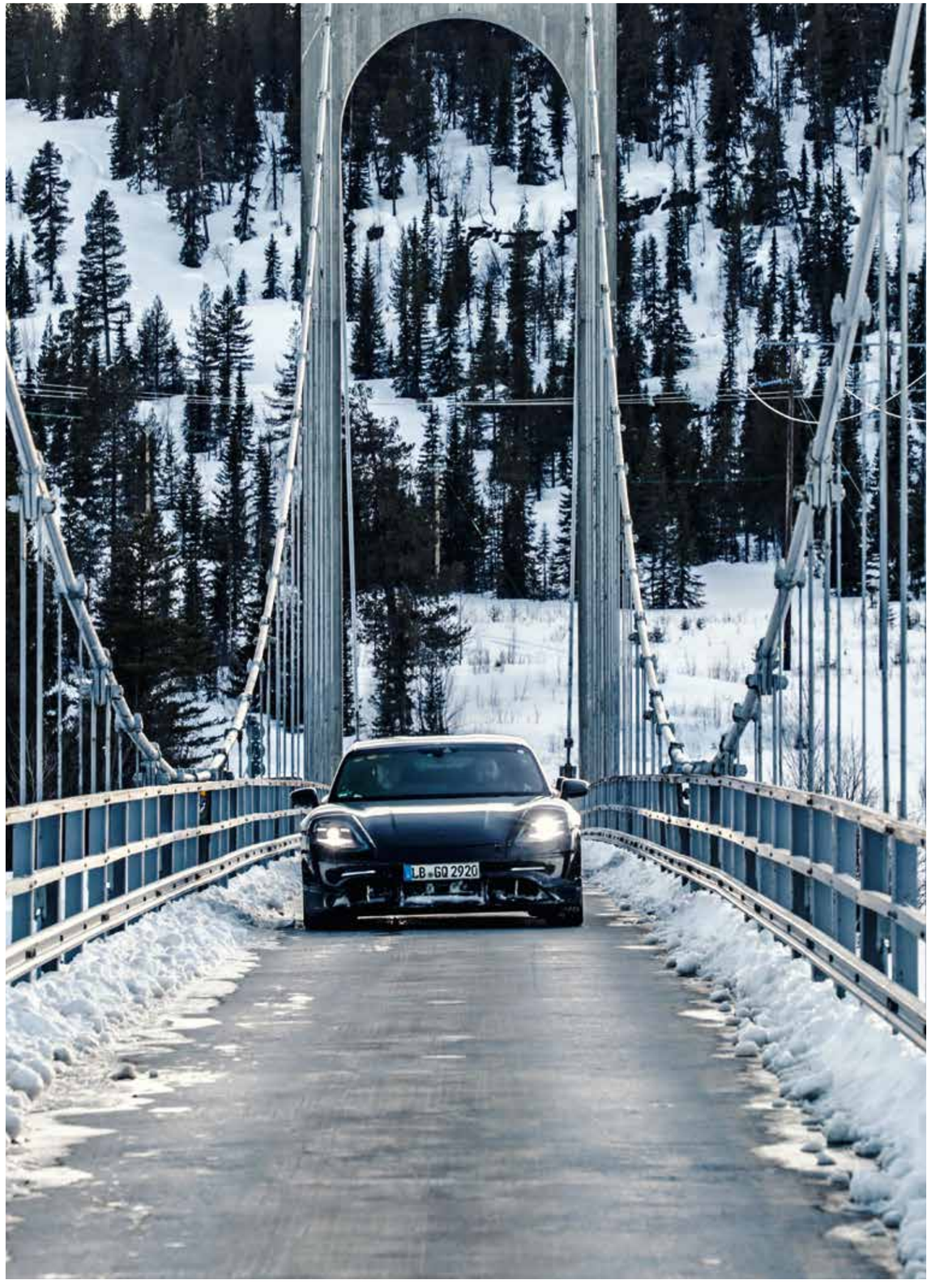
SWEDEN

Here, it is said, if you vigorously toss out the contents of a cup of water, it will freeze before it hits the ground. The temperature record in Lapland is minus 52 degrees Celsius. Northern Sweden is the icebox of the European auto industry. With plenty of space. There are some nine thousand lakes in the vast expanse. With layers of ice thick enough to bear any loads moving about on top. Ideal terrain for driving tests.

The cold has never really been an issue. Taycan's large battery pack has adequate reserves. And electric motors always start. Moreover, it gets warm in the Taycan significantly faster than in a combustion-engine vehicle. The thermal system quickly makes the heat generated by the power grid, the drive management, and motors available to the occupants.

By contrast, ice and snow presented a challenge. In the beginning, at any rate. Not because they compromised Taycan's driving functions in any way. It was more the driving dynamics. At first, the Porsche did not know how to bring its power to the snow-covered or frozen ground. Because the electric motors serve up their full torque from the first revolution. Without application of the brakes, all four wheels sometimes spun helplessly. At times the Taycan would spin out to the right, at times to the left. Only when the drive system developers switched from torque regulation to a revolution-oriented logic did they succeed in taming the force of the electric sports car. Now the two motors coordinate so lighting-fast and accurately that the Taycan has surpassed the benchmark: no other Porsche model lays down a more robust performance on ice. No other slaloms more elegantly or drifts more manageably.

As spectacularly as the sports cars performed at the test center, they purred almost inconspicuously through the winter landscape. At least that was the intention. But not always the reality. Accustomed as they are to prototypes, the Swedes were generally quick to recognize that extraordinary vehicles were in their midst. And what they were made of. To better camouflage them, one observer advised, one ought to at least heat the counterfeit exhaust trims. That way the treacherous snow would not collect inside them, giving up the game.



Silence

“Sometimes you drive an hour through the solitude without crossing paths with anyone. And if you do, it’s your own colleagues. Or moose. Or reindeer.”

Ingo Albers, Project Leader Suspension Taycan

Balancing act

"You have this sense of light-footed nimbleness combined with enormous acceleration. It's a fantastic experience."

Andreas Riedlinger, Team Leader Infotainment Taycan

Preparation

Final touches for the suspension test: winter tires specially developed for the Taycan before testing at the limit.


LB EF 923


LB EF 923
LB EF 923
LB EF 923

31°
13′
49.498″
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Shanghai

CHINA

Hothouse. In April of 2019, testing in Shanghai meant sweat-drenched shirts. But the metropolis of twenty-five million is primed for growth, and not just climatically. E-mobility and digitalization are developing at an astonishing rate. Those who wish to thrive on the Chinese market must be able to keep pace in Shanghai.

Test case: connectivity. The Taycan is more extensively and intensively connected than any Porsche that preceded it. But connections with the outside world in modern Shanghai are only easy at first glance. The legal regulations are different here; the connection to the so-called back end differs from other markets. But the Taycan has to work with this as well. To find the right route, for example. Shanghai without online navigation is an impossibility. And testing without Shanghai is likewise out of the question. The map material cannot be exported. Driving in Shanghai rather than simulating in Weissach. Just to make things a bit more difficult: the major arteries of the road network may well be stacked on top of each other up to five levels high. Yet another challenge for the Taycan developers.

Test case: charging. China's range of variation in this field is similar to that of wireless providers. If not greater. Some sixty providers of charging pedestals are available on the local market. But you have to find them first. There is no joint map of all charging points. The plug systems are indeed standardized. But that does not mean that the multitude of manufacturers precisely apply the standard. Or the protocols by which the charging pedestals and cars communicate with each other. A Porsche cannot give up; it has to adapt, forgive errors. That is the ambition of the engineers. Creative solutions sometimes emerge overnight. To validate them, a tour is in order. From charging pedestal to charging pedestal. Even if it is just a few kilometers.

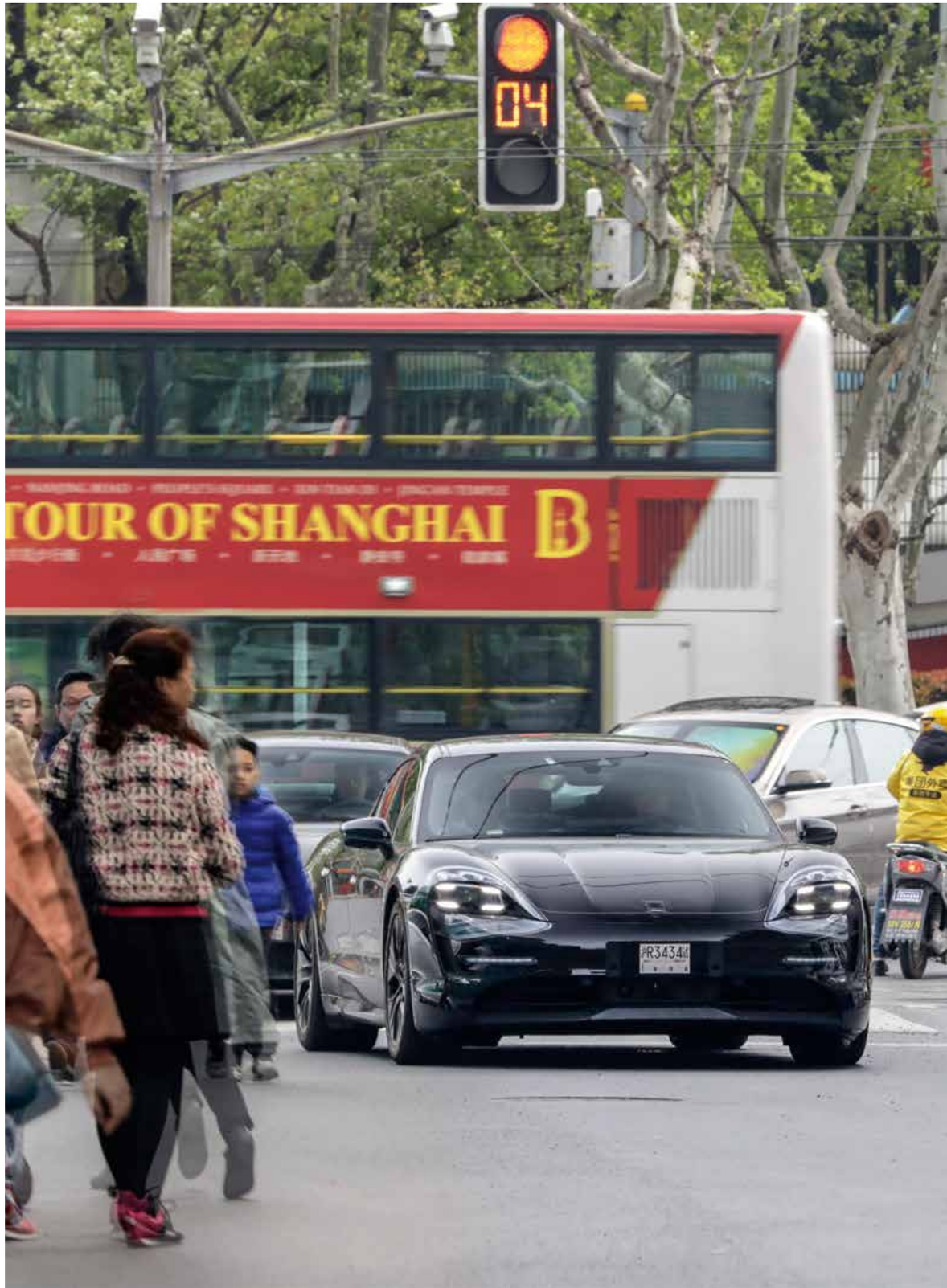
Test case: driving. Traffic in Shanghai is a binary affair. Full acceleration on green, slam on the brakes on red. If you are not stuck in a traffic jam, that is. And crawling along at walking speed. Sometimes the whole day long. Taken together, the scenario presents a very particular type of strain on the vehicle. The Taycan is ready for it. Just one of the traditional Porsche tests is omitted this time: fuel testing was not necessary. There is no such thing as bad electricity.


外
白
渡
桥

Traffic

“Traffic and the driving style are much different in Shanghai than in Western cities. It can be a grind.”

Heiko Mayer, Project Leader Drive Unit Taycan




经济型时尚旅店
上海菜
面点
老上海葱油饼
VERO MODA

Test case

“Navigation in megacities like Shanghai places extreme demands on the system.”

Joachim Kramer, Project Leader Electrics Taycan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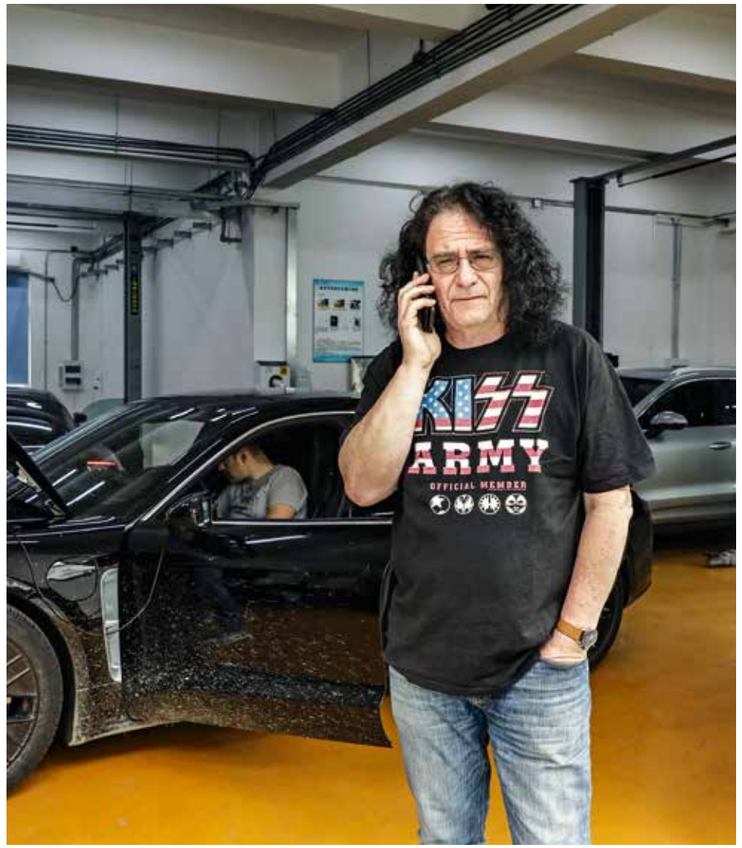
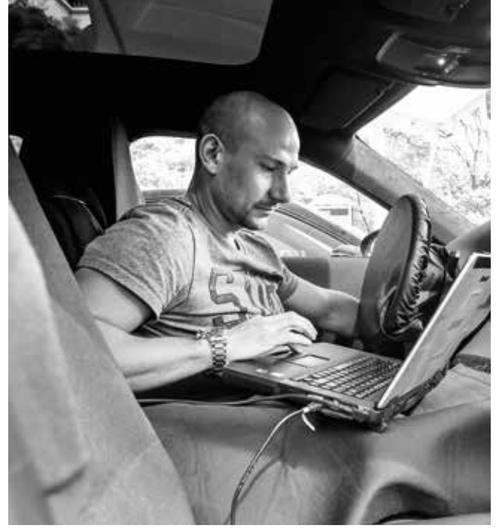


Pragmatism

"Many of the Taycan's new functions can only be experienced on location. So we were only able to detect and correct any errors in China."

Andreas Riedlinger, Team Leader Infotainment Taycan



At the limit

“The components are tested to the limits of their capacity. A customer will practically never reach that point.”

Benjamin Passenberg, Team Leader Electrics Taycan


国家电网
STATE GRID

Viewpoint

"The Taycan generated enormous interest everywhere. The Chinese recognized immediately that it was a Porsche."

Simon Dylla, Team Leader Complete Vehicle Taycan


G25
乾元 临平
Qianyuan Linping
千秋东街
Qianqiu St(E)
舞阳街
Wuyang St.
兴山路
浙AJ2J09
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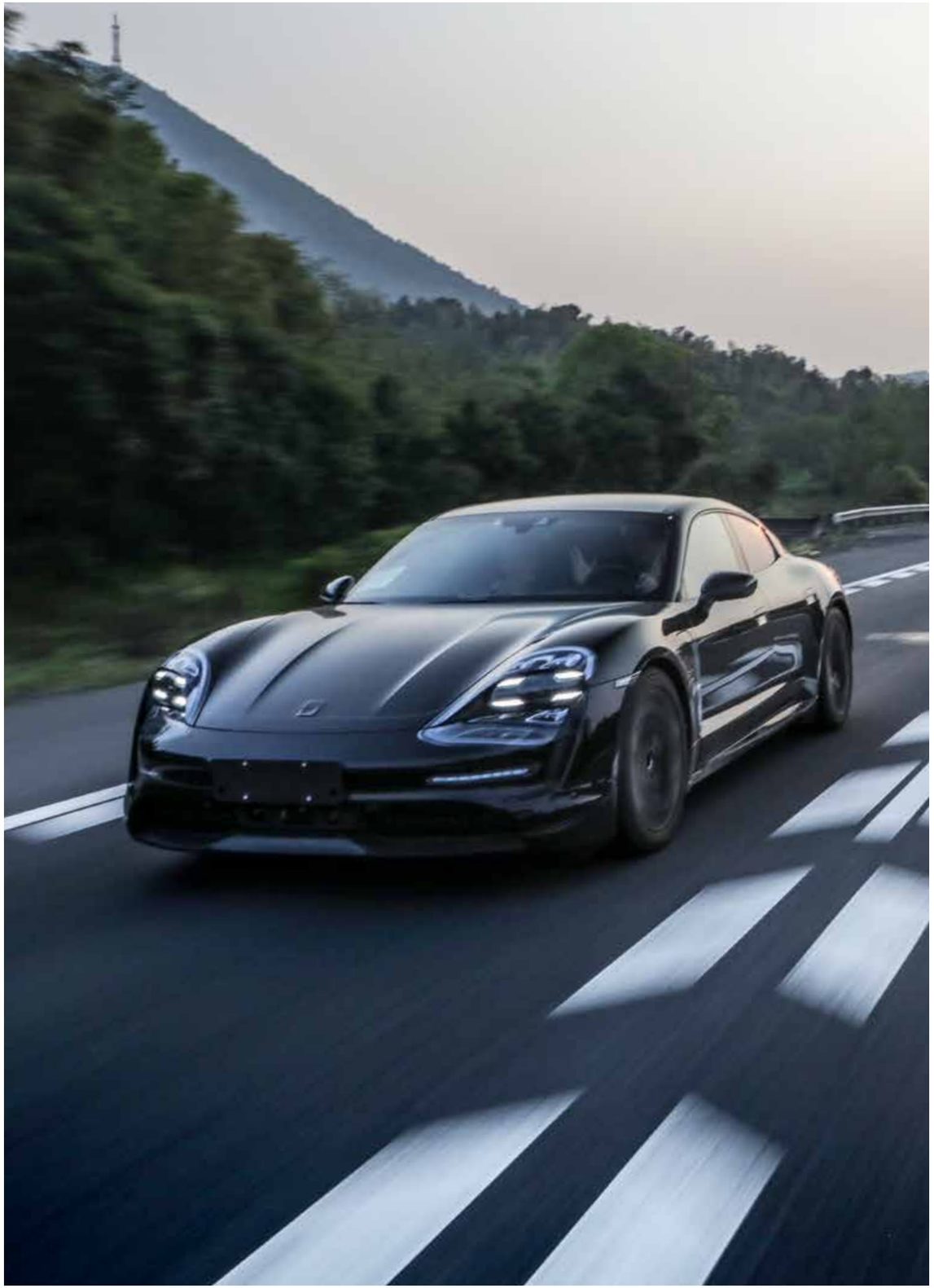

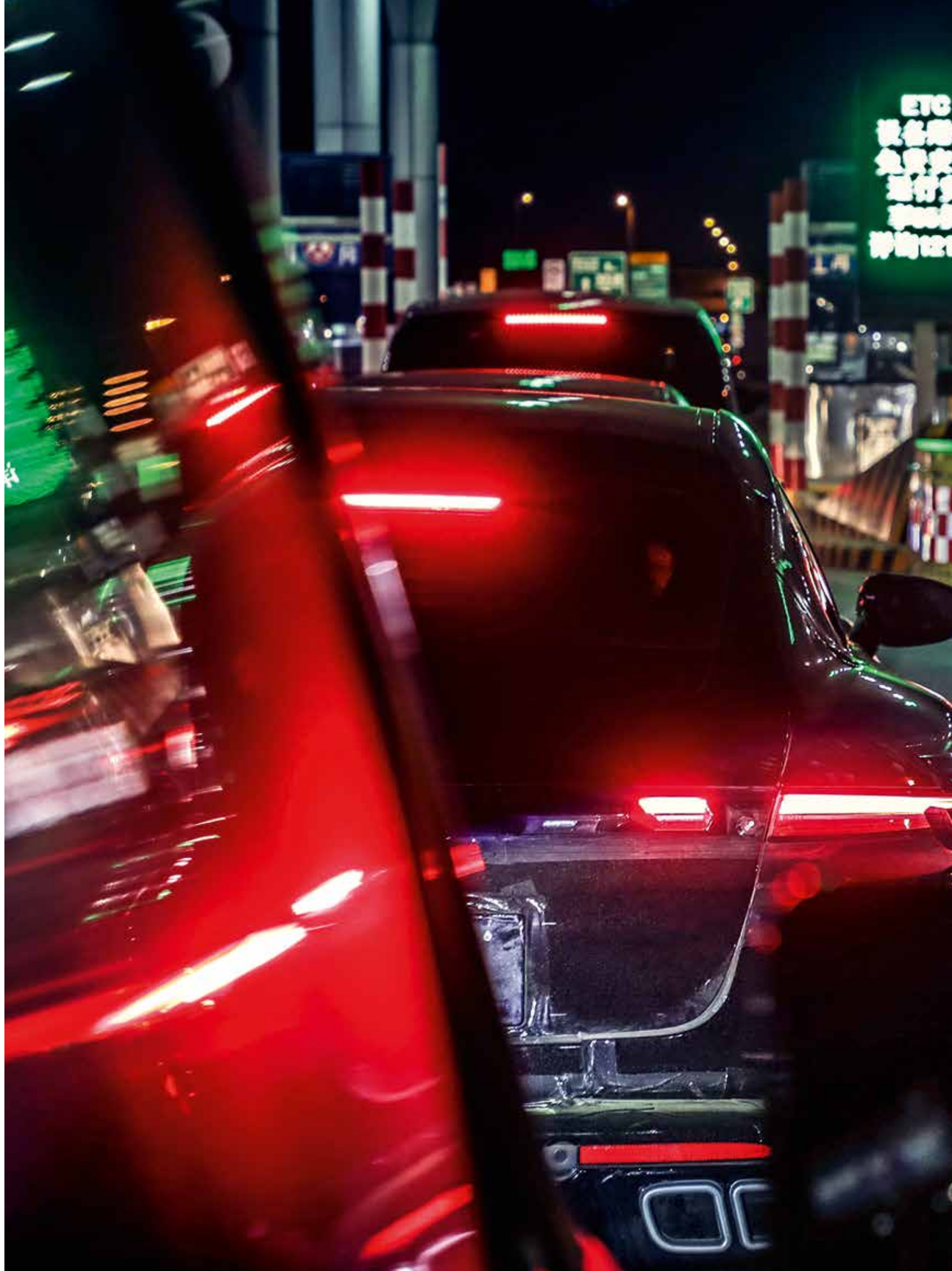

Night shift

"The Taycan is by far the most highly connected Porsche. We make sure that the vehicle harmonizes with the various networks, frequencies, and specific features of the markets. At all times."

Thomas Gruenter
Integration Manager Taycan


PR3433

50°
20´
2.753˝
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Nürburgring

GERMANY

Showdown. The Nordschleife, or northern loop. The high point of every Porsche testing process. The 20.8 kilometers through the infamous "Green Hell." A circuit that mercilessly lays bare what a sports car is. And what sets a Porsche apart. Seven months before the first prototype stood on wheels, engineers chased the Taycan around the course. On the driving simulator. They had tested and evaluated track performance virtually. A particular focus of their efforts was the car's energy management, which is critical to achieving a lap time under eight minutes.

On the day of truth, an entirely different set of challenges emerges. For the battery cooling concept, for example. It heats up during acceleration because it puts out energy. And during braking, because it takes in energy. In between it takes a deep breath, cools down. On a normal driving route. But the Nordschleife offers no chance to catch one's breath. It is either accelerate or charge. Flooring it up the hill generates a huge amount of heat. Even under racing conditions, the Taycan recuperates the maximum amount of energy possible. Soul, electrified.

The car: A prototype from the testing vehicle fleet. Equipped just the same as the current series offering. With the typically low center of gravity with which the Taycan bests even the 911. With an active suspension and electric rolling-motion compensation. Beyond safety and the requisite measurement technology, the objective of every test-drive is to approximate the series vehicle and thus the customer experience as closely as possible.

The driver: Lars Kern, works driver for testing and bona fide Nürburgring expert. He was skeptical at first. "The incredible feeling of driving through Hatzenbach is still with me. After just a few hundred meters my skepticism turned into fascination."

The team had a similar experience. In theory, they all knew that the Taycan would be fast. In practice, however, most of them were astonished how the sports car moved through the Eifel region. The developers gained additional insights. How they could further optimize the cooling strategy or continue to perfect the anti-roll stabilization. It had always been their goal to build a Porsche. So it would be tested like a Porsche.

High voltage

"A lap at the limit that I couldn't have imagined. It's time for the Taycan to be launched on the market. There's nothing left to do."

Lars Kern, Porsche Test and Development Driver


Soul, electrified.
TAYCAN
Soul, electrified.
Soul, electrified.
LB GB 1038
TAYCAN


LB GB 1038
TAYCAN


LB GB 1038 TAYCAN

Qualifying

"Our standard is always to have the sportiest offering in the segment: compact, attractive design, high performance, and yet day-to-day usability. That's the soul of Porsche."

Stefan Weckbach, Vice President Model Line Taycan

48°
50′
3.156″
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Zuffenhausen

GERMANY

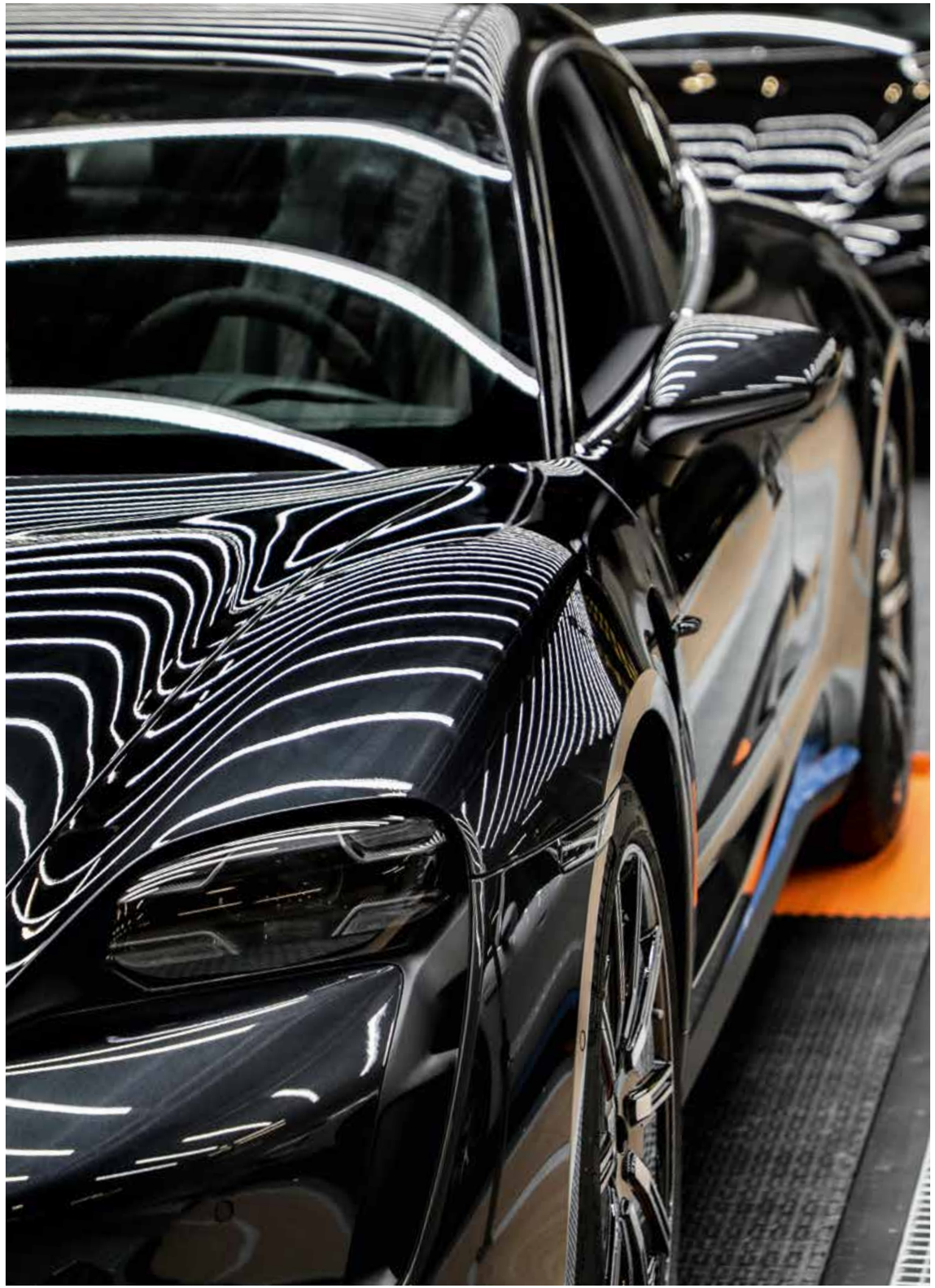
Design stages. Pre-series. Zero series. The clock is ticking. While the prototypes of the Taycan are coursing the roads of the world, production preparations are proceeding full steam ahead at Porsche's main production plant in Stuttgart-Zuffenhausen. New technologies, new processes, new employees, new machines. Everything has to be ready to go. A different type of testing. The goal has three letters: SOP. Start of production.

Innovation. The production is every bit as impressive as the product. The concept chock-full of new ideas. For the Taycan, a factory was built within the factory. With a new bodyworks, a new paint shop, a new electric drive and component production facility as well as a new assembly line and conveyor bridge for transporting the painted bodies and drive units to final assembly. In Zuffenhausen, where the heart and soul of the brand are at home. Simultaneously with the full-scale production of the two-door sports cars of the 911 and 718 model ranges.

The schedule was ambitious from the outset. Series production was slated to be in the starting blocks in less than four years. In view of the tight quarters in Stuttgart, six thousand transplants had to be arranged to construct the new buildings and facilities—in just under half a year. The space constraints were a challenge, but not an obstacle: Porsche simply built upwards. As in previous plant expansions. The Taycan is produced on three floors, from top to bottom. Assembly is done on the third and second floors, while logistics bay and final acceptance facilities are on the ground floor. From there the finished vehicles proceed on a conveyor bridge to the new loading terminal, as they make their way to the customer. A logistical masterpiece, virtually unique in automobile production.

The production concept is as innovative as the vehicle itself. With the Taycan, Porsche bids farewell to the traditional assembly line. The company has become the first vehicle manufacturer to adopt driverless transport systems in the continuous flow of series production in what is known as a flexi-line. With the flexi-line, Porsche combines the advantages of the classic assembly line principle with the flexibility of adaptable assembly. For more work cycles in the same space. The system can be modified, modernized, and adapted to customer wishes at any time.

And the product and production have one more thing in common as well: no emissions. Production of the Taycan in Zuffenhausen is CO_2-neutral. Porsche Production 4.0 is smart, lean, and green. The new plant as the prototype of a "Zero Impact Factory"—production with no environmental impact.

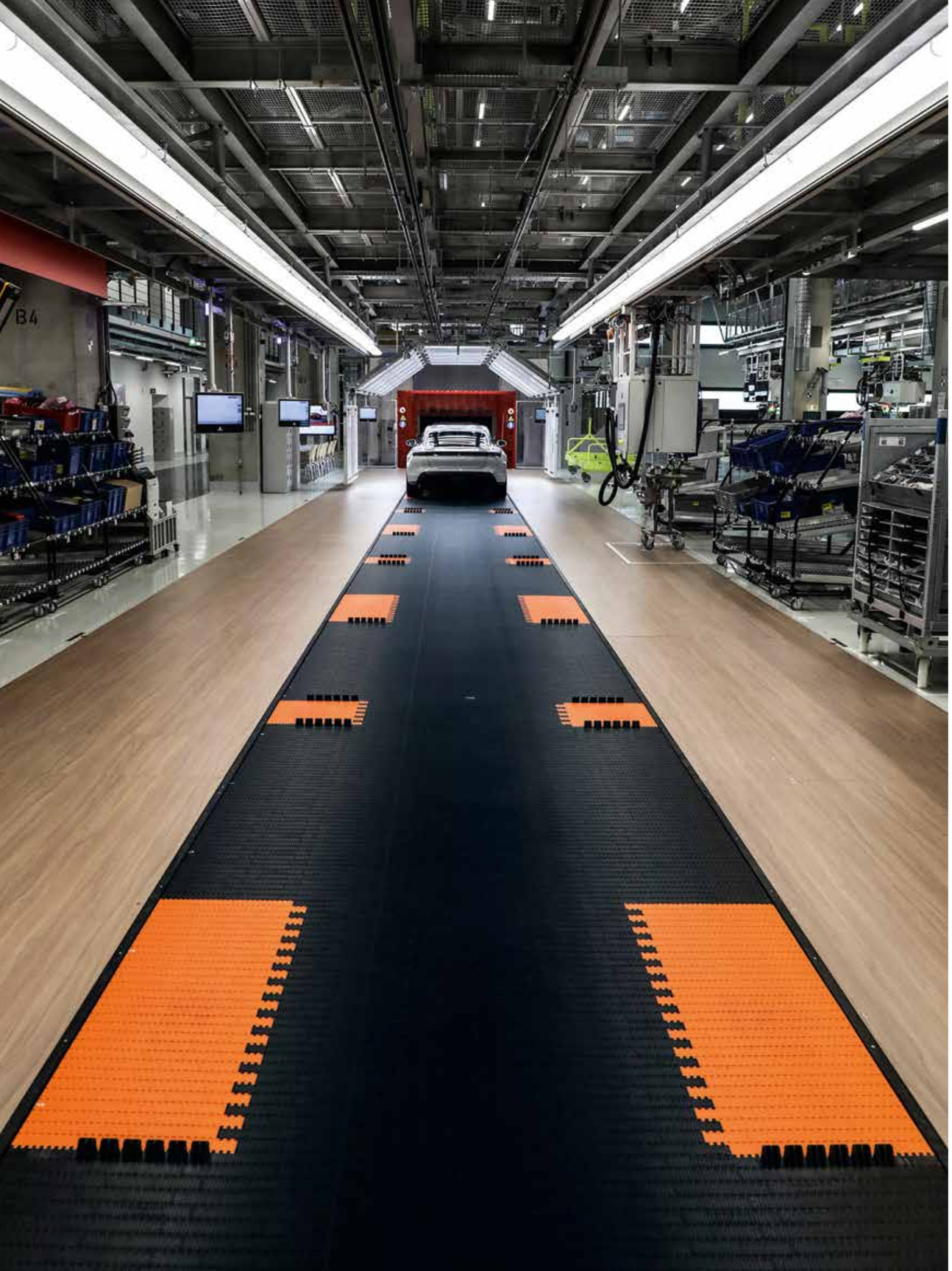



002

Innovation

"It's not the case that we simply put a battery where the gas tank was and replace the combustion engine with an electric drive. That's why we're giving all of our employees additional training. Ultimately, we want to guarantee the high quality standards of Porsche for the Taycan as well."

Albrecht Reimold, Member of the Executive Board for Production and Logistics, Porsche AG


B4


BWS
BWS

Masterpiece

"The integration of a completely new production facility for the Taycan took place in parallel to the production operating at full speed in Zuffenhausen. This is unique and the result of extraordinary teamwork."

Alexander Matle, Project Leader Production Taycan

Individuality

"The combination of state-of-the-art technologies and the expertise of our specialists is indispensable in meeting the exacting challenge of building high-quality, customized, and high-performance sports cars."

Albrecht Reimold, Member of the Executive Board for Production and Logistics, Porsche AG

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Kaunertal

AUSTRIA

Showtime. Testing is gradually coming to an end. The Taycan is in top form. Inside and out. Time for the design. Attractive. Emotional. Fascinating. A true Porsche.

A look back. Two hundred prototypes and pre-series vehicles have covered a total of some six million kilometers, including two million kilometers of continuous driving. The Taycan powered up with different technologies in over one hundred thousand charging cycles—in thirty countries all around the world. At temperatures between minus 35 and plus 50 degrees Celsius and in humidity ranging from 20 to 100 percent. Every prototype experienced each season twice. Basic testing in the first round, the expectation of perfection in the second. Some one thousand test-drivers, technicians, and engineers agonized, tested, tinkered, perfected. Old hands mixed with promising youngsters, bonded to form a team. All the best for the product. With passion for Porsche. One day they will say: we were there.

Photo shoot in Kaunertal, a place of solitude in Tyrol. Where all masks can be cast off without the fear of uninvited eyes. Much has been retained from the Mission E, the archetype of the electric Porsche. The sculpture of a low-slung sports sedan with all the attributes of the sports cars from Zuffenhausen. With visible innovations like the integrated aerodynamics. The very reductive sweep of the front, with classic Porsche contours. Pronounced front fenders and the extremely flat hood line draw on the design of the 911. As in the 911 GT3 RS, a broad, pronounced notch stretches from the front luggage compartment lid over the roof. The window lines recall the 911 as well. The rear design underscores the typical sports-car architecture. The slim cabin with its accelerated, inward-sweeping rear window creates space for the notably flared rear fenders—with a charisma that only a Porsche can muster. Michael Mauer, Vice President Style Porsche, says: “It's the designers' dream for the Taycan to one day achieve a similar significance to that of the 911.”

Pioneer

“From the engineer and the software developer to the designer and even the sales and finance experts, it’s clear to one and all: we’re creating a new world for Porsche.”

Stefan Weckbach, Vice President Model Line Taycan


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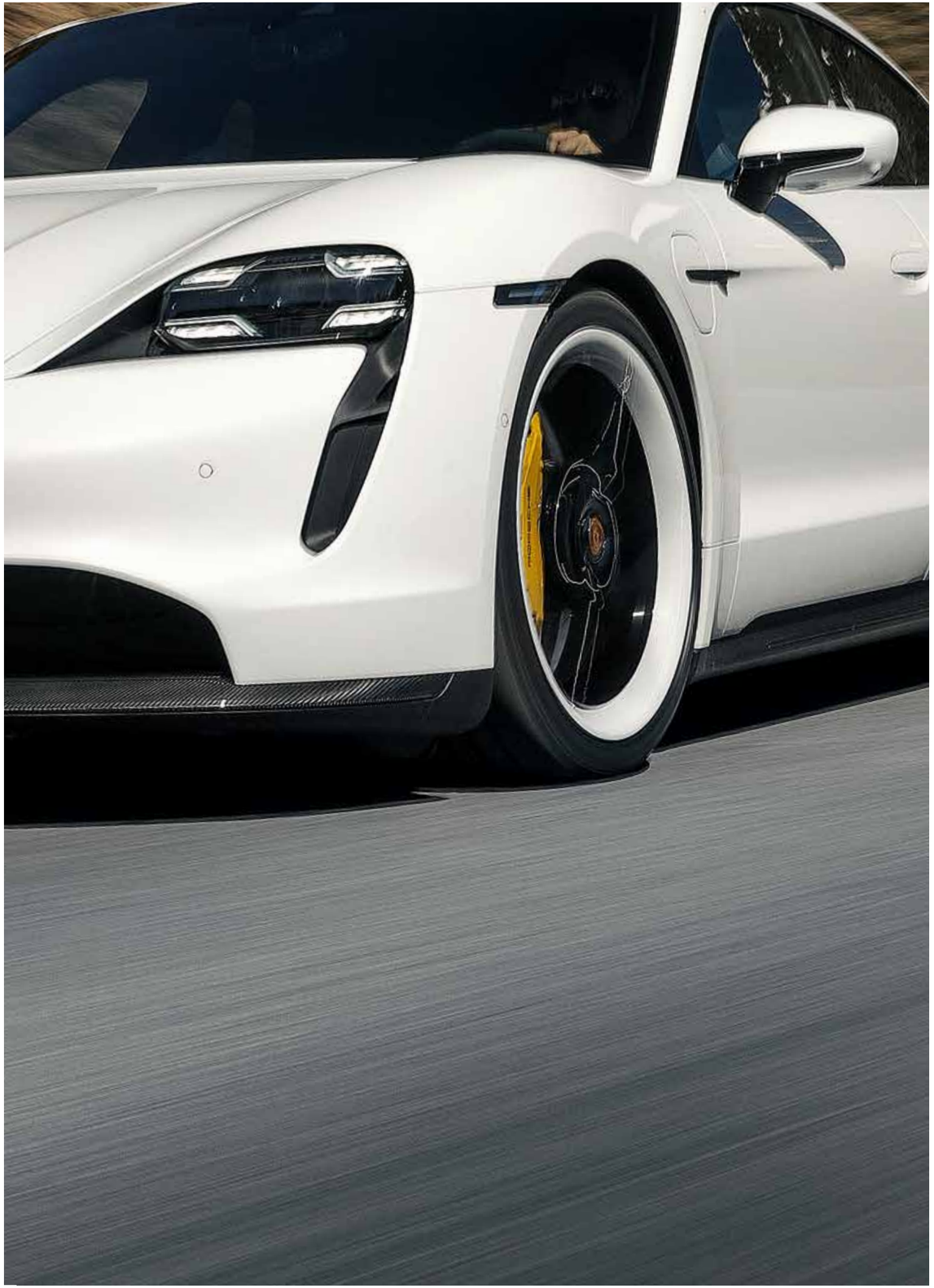
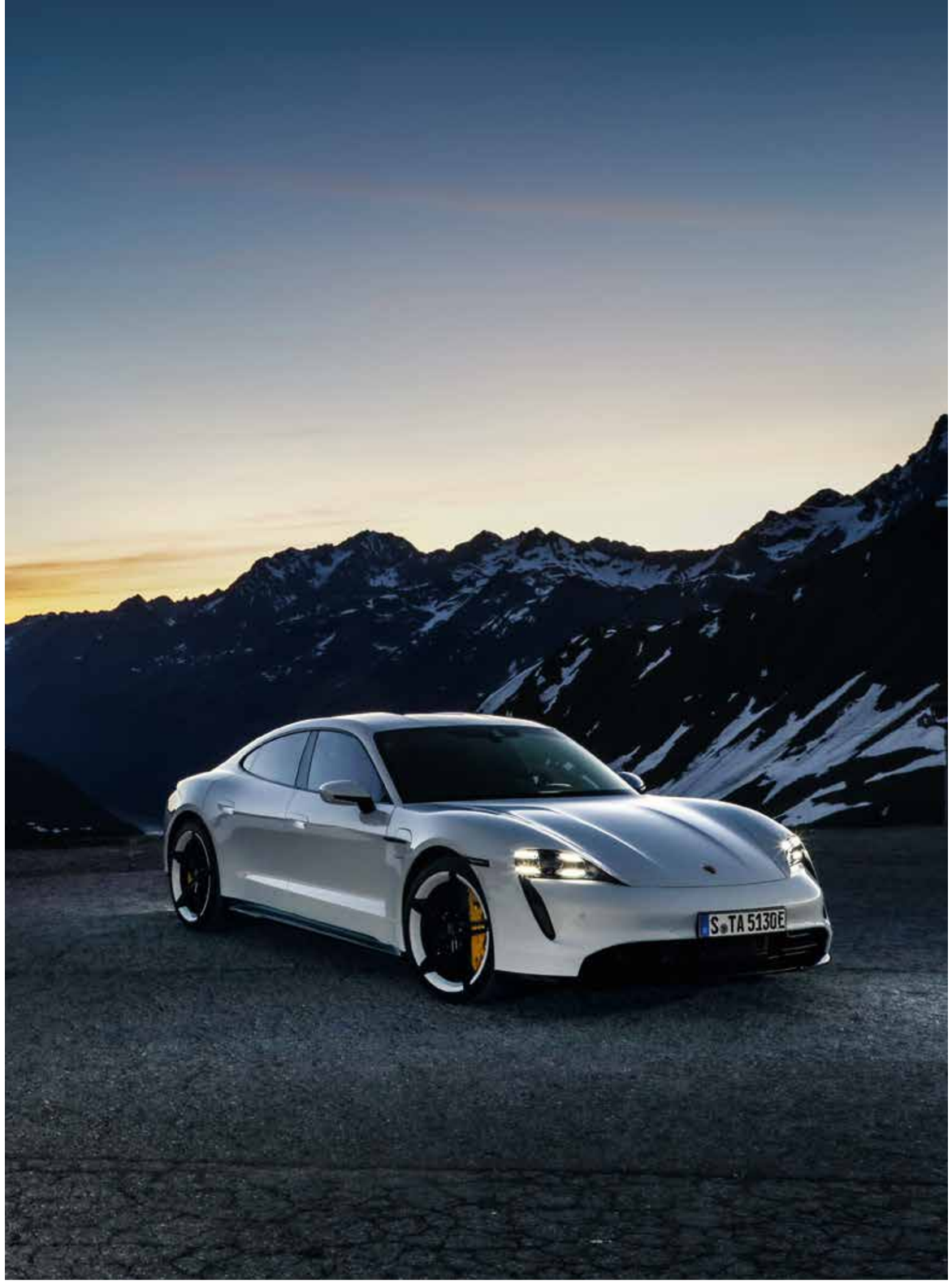


Fascination

“Every Porsche should be something special and fulfill the customer’s dream.”

Oliver Blume, Chairman of the Executive Board, Porsche AG

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