PORSCHE

The new Taycan Turbo S and the new Taycan Turbo

Press Kit

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Taycan Turbo S: power consumption combined 26.9 kWh/100 km; CO_2 emissions combined 0 g/km
Taycan Turbo: power consumption combined 26.0 kWh/100 km; CO_2 emissions combined 0 g/km

The consumption and CO_2 emissions values were calculated using the new Worldwide Harmonised Light Vehicle Test Procedure (WLTP). The NEDC values derived from this must continue to be specified for the time being. These values cannot be compared to the values calculated based on the NEDC measuring procedure used up to now.

Further information on the official fuel consumption and official specific CO_2 emissions of new passenger cars is available in the publication "Guidelines on fuel consumption, CO_2 emissions and power consumption of new passenger cars", which is available free of charge from all sales outlets and from Deutsche Automobil Treuhand GmbH (DAT).

Highlights

Key facts about the Porsche Taycan

Puristic new exterior design with Porsche DNA.

With its clean, puristic design, the Taycan signals the beginning of a new era, At the same time, it retains the unmistakeable Porsche design DNA. Its silhouette is defined by the sporty roofline sloping downward to the rear – called a "flyline" by the Porsche designers. The highly sculpted side sections are also characteristic. The sleek cabin (the greenhouse), the drawn-in C-pillar and the pronounced shoulders of the wings result in a sharply emphasised rear, typical of the brand. Elements such as the glass design Porsche lettering which is integrated in the continuous lighting strip in the rear are also included.

Unique interior design with a wide display band.

Inside, classic design features have been reinterpreted and brought into the digital age. The wing-shaped upper and lower sections of the dashboard stretch across the entire width of the car. The free-standing, curved instrument cluster forms the highest point on the dashboard. This places a clear focus on the driver axis. A central, 10.9-inch infotainment display and an optional passenger display are combined to form an integrated glass band in a black-panel look. There is also the option of classic leather for the seats as well as the sustainably tanned Club Leather OLEA, which uses olive leaves in the tanning process. A fully leather-free interior is now also available for the first time. The floor covering uses the recycled fibre Econyl®, which is made from, among other things, recycled fishing nets.

Best C_d value of all current Porsche cars.

The outstanding aerodynamics with a C_d value from 0.22 make a significant contribution to low energy consumption and thus long range. The measures in the Porsche Active Aerodynamics (PAA) area include adjustable air intakes at the front and a variable rear spoiler. Thanks to air suspension, the car's frontal surface area is reduced by lowering the Taycan in two stages at higher speeds.

800-volt system voltage and battery with 93.4 kWh.

The Taycan is the first production vehicle with a system voltage of 800 volts instead of the usual 400 volts for electric cars. This ensures consistent high performance, significantly reduces the charging period and lowers the weight of and space required for the high-voltage cables. The overall capacity of the Performance Battery Plus lithium-ion battery is 93.4 kWh.

Innovative drive motors and a two-speed gearbox.

When it comes to propulsion, Porsche has its own approach – as would be expected of the brand. The Taycan Turbo and Taycan Turbo S have two exceptionally efficient electric motors, one on the front axle and one on the rear axle. In combination with hairpin technology, the permanently excited synchronous motors provide the highest power density and efficiency, as well as maximum reproducibility, when it comes to driving performance. In hairpin windings, the solenoid coils of the electric motor consist of wires that are rectangular rather than round. A two-speed transmission is used on the rear axle to meet the high demands for acceleration and top speed.

Breathtaking acceleration figures and superior continuous performance

With up to 560 kW (761 PS) overboost power in conjunction with Launch Control, the top Turbo S version of the Taycan can accelerate from 0–100 km/h in 2.8 seconds, and the Taycan Turbo in 3.2 seconds with up to 500 kW (680 PS). The top model reaches the 200 km/h mark in 9.8 seconds, while the Turbo takes 10.6 seconds. The range of the Turbo S is up to 412 kilometres (according to WLTP). The Turbo has a range of up to 450 kilometres. The top speed of both models is 260 km/h.

Intelligent charge management at home and on the road.

Taycan drivers can comfortably charge their vehicles with up to 11 kW of alternating current (AC) at home. On the road, they benefit from the car's 800-volt technology – in just over five minutes, the car can be recharged with direct current (DC) energy for a range of up to 100 kilometres (according to WLTP). The battery can be charged from 5 to 80 percent SoC (state of charge) in 22.5 minutes under ideal conditions and using high-power charging (HPC) stations with up to 270 kW.

Innovative chassis systems

The integrated Porsche 4D Chassis Control analyses and synchronises all chassis systems in real time. The innovative chassis systems include adaptive air suspension with three-chamber technology including electronic damper control PASM (Porsche Active Suspension Management), as well as the electromechanical roll stabilisation system Porsche Dynamic Chassis Control Sport (PDCC Sport) including Porsche Torque Vectoring Plus (PTV Plus). The all-wheel drive control with two electric motors and the recuperation system are unique. Thanks to the Taycan's high recuperation output of up to 265 kW, approximately 90 percent of braking operations in everyday use are performed by the electric motors alone, without activating the wheel brakes.

Sophisticated mix of materials for maximum strength.

The Taycan was designed as a purely electrically powered sports car from the ground up. In terms of technology, the engineers used the resulting design freedom to get the most out of the vehicle concept. The low, central installation position of the Performance Battery Plus ensures a very low centre of gravity. Its integration was an essential cornerstone in the design of the body, which features a number of innovations. The aluminium housing of the underfloor battery is part of the Taycan's safety structure. A total of 28 bolts are used to attach it to the body. The fully galvanised body is a mix of the main materials aluminium and steel.

Extensive passive safety systems.

Depending on the seating configuration, four or five three-point belts with force limiters are fitted as standard. The Porsche Side Impact Protection System consists of side impact protection elements in the doors, and thorax airbags that are integrated in the side bolsters of the front seats. The side protection system is rounded off by curtain airbags covering the entire roof frame and side windows from the A to the C pillar. Classic full-size airbags and one knee airbag each for driver and front passenger are available at the front.

Modern assistance systems.

A variety of comfort and assistance systems make the Taycan not only safer, but also much more comfortable to travel in. Another new feature is the RECAS assist system (Rear End Collision Alert System), which actively warns the traffic behind of a potential rear-end collision.

Innovative air conditioning concept.

In the Taycan, the louvre-less air vents are electrically controlled and, for the first time, integrated into the fully automatic control of the air conditioning system. The optional heat pump uses the power-train's waste heat to heat the interior efficiently, benefiting the range for the customer.

Extensive standard equipment.

Taycan Turbo S: features include 18-way electrically adjustable adaptive sports seats, leather-free two-tone design and rear axle steering, Sport Chrono package and Porsche Electric Sport Sound. Taycan Turbo: features include LED matrix headlights, Advanced Climate Control (two-zone), multi-function sports leather steering wheel, leather upholstery and 14-way electrically adjustable comfort seats. Porsche Communication Management (PCM), including online navigation , Porsche Charging Planner1, a mobile phone preparation, audio interfaces and voice control, is standard equipment on board. The latter responds to the command “Hey Porsche”.

Test drives all over the world.

After early computer simulations and extensive test rig tests, the Taycan will have covered around six million kilometres worldwide before its market launch at the end of 2019. At Porsche, electric cars have to undergo the same rigorous testing programme as combustion-engined sports cars. In addition, battery charging was tested under extreme conditions.

Porsche Production 4.0 – smart, lean and green.

A state-of-the-art production facility, featuring both new technology and processes, has been built in Stuttgart-Zuffenhausen. It follows the Porsche Production 4.0 approach – smart, lean and green. Smart stands for flexible, networked production. Lean means the efficient use of resources. And green refers to sustainability and environmental protection. E-mobility is driving the creation of new jobs at Porsche: The Porsche Taycan and its derivative, the Cross Turismo, will result in 1,500 new jobs.

Sustainability.

Right from the start, it was clear to Porsche that production of a fully electric car also had to be CO_2-neutral. The newly built factory in the Zuffenhausen district of Stuttgart is pursuing a vision of a factory with no environmental impact. Both the materials used in the Taycan's interior, some of which consist of recycled materials, and a charging infrastructure using green electricity, are particularly sustainable.

Glossary

The most important technical terms

AC charging: Charging using Alternating Current. However, electric cars store direct current (DC) in the battery. 240 V/400 V alternating current must therefore be converted into 800 V direct current. This is done by the on-board charger in the vehicle. The Porsche Taycan charges with up to 11 kW.

800-volt technology: The Porsche Taycan is the first production vehicle with 800-volt technology. Its drive system components use this voltage. At the same power output, half the cross-section of conventional 400-volt technology is sufficient for cables. In the Taycan, this saves around four kilograms in weight, reduces transmission losses and requires less installation space. The new generation of charging stations developed by Porsche Engineering Services GmbH under the name "Porsche Charging" is designed for 800-volt technology. This significantly shortens charging times because higher power outputs can be achieved. However, the vehicle components and in particular the battery (cooling) must also be appropriately adapted.

Combined Charging System (CCS): The CCS plug is a combined plug for AC and DC. Normal alternating current (AC) flows through the upper, round part, direct current (DC) is transmitted through the two contacts in the lower part and is also used for high-power charging. Porsche uses the Combined Charging System as standard in Europe and in Northamerica. For Japan and China, Porsche offers the local standards (IGBT, Chademo).

DC charging: Charging using direct current. Here, the current is charged directly into the battery without further conversion, the rectifier is installed in the charging station. A booster in the on-board charger makes 800-volt power possible. The charging capacity of the Taycan is then up to 270 kW.

Hairpin winding: The stator coils of the electric motor consist of wires that are rectangular in the Taycan rather than round. The wires are bent and their shape — before they are inserted into the stator's laminated core — is reminiscent of that of hairpins, hence the name "hairpin". The open ends are welded together using a laser beam. The manufacturing process of hairpin technology is complex, but it allows the wires to be packed more densely and thus increases the amount of copper

in the stator. This increases power output and torque for the same volume. Another important advantage for a high-performance car like the Taycan is that a hairpin stator can be cooled considerably more efficiently.

Lithium-ion battery: the cells of this type of battery consist of an anode, cathode, separator and electrolyte. During discharge, the anode releases electrons. These move to the cathode via an external electrical load, e.g. electric drives, and current then flows. In return, positive lithium ions migrate from the anode into the electrolyte and flow through the separator to the cathode. When charging, a voltage is applied from the outside. The process is reversed: the lithium ions now migrate from the cathode to the anode and are deposited in the graphite lattice (intercalation). Lithium-ion batteries are thermally stable in a wide range. They have a low level of self-discharge and are not subject to any memory effect. Compared to lead and nickel metal hydride batteries, lithium-ion batteries offer a higher energy and power density (volumetric and gravimetric) and are therefore smaller and lighter for the same energy content.

Permanently excited synchronous motors: design type electric motors. The rotor of the AC motor is equipped with permanent magnets. They provide a permanent magnetic field in the motor. The advantages include high power density, high efficiency and high power constancy over the entire speed range and in the long term.

Pulse-controlled inverter: This is the interface between the electric motor and the battery. The pulse-controlled inverter converts the direct current from the battery into alternating current for the electric motor when driving the electric motors. The pulse-controlled inverter determines the frequency of the rotating field in the electric motor's stator, which sets the speed of the rotor.

Energy recuperation: the recovery of energy (Latin: recuperare, to recover). When the Taycan's driver presses the brake pedal, the electric motors are used as generators and deceleration therefore initially takes place without the intervention of the mechanical wheel brakes. The kinetic energy of a car is thus converted back into electrical energy, which is routed into the battery. If a car has to be decelerated strongly, more braking power is required than the electric motors can generate. In this case, the conventional (friction) brakes also intervene. A distinction can be made between overrun recuperation

and brake recuperation. With overrun recuperation, the electric motors are used for deceleration when the accelerator pedal is released. In brake recuperation, the braking system is used to decide which part of deceleration is realised by recuperation and which part by conventional wheel braking.

Puristic design combined with fully electric powertrain

The Porsche Taycan: sports cars, reinterpreted sustainably

The first all-electric sports car, the Taycan, marks the beginning of a new era for Porsche as the company systematically expands its product range in the field of e-mobility. The four-door sports saloon is a unique package offering typical Porsche performance, connectivity and comprehensive everyday usability. At the same time, highly advanced production methods and the production features of the Taycan are setting new standards in the fields of sustainability and digitalisation. The first models in the new series are the Taycan Turbo S and Taycan Turbo. They are at the cutting edge of Porsche E-Performance and are among the most powerful production models that the sports car manufacturer currently has in its product range. Less powerful variants of these all-wheel drive vehicles will follow this year. The first derivative to be added will be the Taycan Cross Turismo at the end of next year. By 2022, Porsche will have invested more than six billion euros in electromobility.

Performance meets efficiency

The flagship Turbo S version of the Taycan can generate up to 560 kW (761 PS) overboost power in combination with Launch Control, and the Taycan Turbo up to 500 kW (680 PS). The Taycan Turbo S accelerates from zero to 100 km/h in 2.8 seconds, while the Taycan Turbo completes this sprint in 3.2 seconds. The Turbo S has a range of up to 412 kilometres, and the Turbo a range of up to 450 kilometres (according to WLTP in each case). The top speed of both all-wheel-drive models is 260 km/h.

The Taycan is the first production vehicle with a system voltage of 800 volts instead of the usual 400 volts for electric cars. This is a particular advantage for Taycan drivers on the road: in just over five minutes, the battery can be recharged using direct current (DC) from the high-power charging network for a range of up to 100 kilometres (according to WLTP). The charging time for five to 80 percent SoC (state of charge) is 22.5 minutes for charging under ideal conditions, and the maximum charging power (peak) is 270 kW. The overall capacity of the Performance Battery Plus is 93.4 kWh. Taycan drivers can comfortably charge their cars with up to eleven kW of alternating current (AC) at home.

Pure exterior design with Porsche DNA

With its clean, puristic design, the Taycan signals the beginning of a new era. At the same time, it retains the unmistakable Porsche design DNA. From the front it looks particularly wide and flat with highly contoured wings. The silhouette is shaped by the sporty roofline sloping downward to the rear. The highly sculpted side sections are also characteristic. The sleek cabin, the drawn-in rear C-pillar and the pronounced shoulders of the wings result in a sharply emphasised rear, typical of the brand. There are also innovative elements such as the glass-effect Porsche logo, which has been integrated into the light bar at the rear. With a C_d value from 0.22, the aerodynamically optimised basic shape makes a significant contribution to low energy consumption and thus long range.

Unique interior design with a wide display screen band

The cockpit signals the start of a new era with its clear structure and a completely new architecture. The free-standing, curved instrument cluster forms the highest point on the dashboard. This places a clear focus on the driver axis. A central, 10.9-inch infotainment display and an optional passenger display are combined to form an integrated glass band in a black-panel look. All user interfaces have been completely newly designed for the Taycan. The number of classic hardware controls such as switches and buttons has been greatly reduced. Instead, control is intelligent and intuitive – using touch operation or the voice control function, which responds to the command “Hey Porsche”.

With the Taycan, Porsche offers an entirely leather-free interior for the first time. Interiors made from innovative recycled materials underscore the sustainable concept of the electric sports car. “Foot garages” – recesses in the battery in the rear footwell – ensure sitting comfort in the rear and allow the low vehicle height typical of sports cars. Two luggage compartments are available: the front compartment has a capacity of 81 litres and the rear 366 litres.

Innovative drive motors and a two-speed transmission

The Taycan Turbo S and Taycan Turbo have two exceptionally efficient electric machines, one on the front axle and one on the rear axle, thus making the cars all-wheel drive. Both the range and the continuous power of the drive benefit from the high efficiency of the permanently excited synchronous machines. The electric machine, transmission and pulse-controlled inverter are each combined into a

compact drive module. The modules have the highest power density (kW per litre of package space) of all electric powertrains on the market today. A special feature of the electric motors is the "hairpin" winding of the stator coils. This technology makes it possible to incorporate more copper in the stator, increasing power output and torque while maintaining the same component volume. The two-speed transmission installed on the rear axle is an innovation developed by Porsche. First gear gives the Taycan even more acceleration from a standing start, while second gear with a long gear ratio ensures high efficiency and equally high power reserves. This also applies at very high speeds.

Centrally networked chassis systems

Porsche uses a centrally networked control system for the Taycan chassis. The integrated Porsche 4D Chassis Control analyses and synchronises all chassis systems in real time. The innovative chassis systems include adaptive air suspension with three-chamber technology including PASM (Porsche Active Suspension Management) electronic damper control, as well as the Porsche Dynamic Chassis Control Sport (PDCC Sport) electromechanical roll stabilisation system including Porsche Torque Vectoring Plus (PTV Plus). The all-wheel drive control with two electric motors and the recuperation system are unique. At up to 265 kW, the potential recuperation power is significantly higher than that of competitors. Driving tests have shown that approximately 90 percent of everyday braking is performed by the electric machines alone – without the hydraulic wheel brakes being activated.

The profile of the different driving modes basically follows the same philosophy as in other Porsche model series. This is supplemented by special settings which enable optimum use of the purely electric drive. Four driving modes are available: "Range", "Normal", "Sport" and "Sport Plus". In addition, individual systems can be configured as required in the "Individual" mode.

The exterior design

Puristic new design with Porsche DNA

Breaking new ground in the best Porsche design tradition – that was the brief for designing the Taycan. As it was designed as a fully electric vehicle from the outset, new freedoms opened up for the designers. At the same time, the first purely electrically powered Porsche had to be immediately recognisable as such.

The result is an emotionally charged, four-door sports saloon that carries the unmistakeable Porsche design DNA. Its silhouette is defined by the sporty roofline sloping downward to the rear – called a "flyline" by the Porsche designers. The highly sculpted side sections are also characteristic. The sleek cabin (the greenhouse), the drawn-in C-pillar and the pronounced shoulders of the wings result in a sharply emphasised rear, typical of the brand. At the same time, with its clean, pure approach and innovative elements such as the Porsche lettering in glass-effect in the rear light bar, the sports saloon signals that, at first glance, a new era has begun. However, the Taycan has remained very close to the 2015 Mission E concept car on the whole.

The front: a striking look with a unique light emblem

The Taycan is 1,966 millimetres wide, but only around 1,380 millimetres high. From the front, it therefore looks particularly wide and flat. Due to the compact drive components, the bonnet slopes down at a flat angle between the two highly pronounced wings, a feature typical for Porsche. The LED matrix headlights form a visual unit with the air curtains and seem to float. The four-point daytime running lights that are typical of the brand are flatter and wider than any other Porsche. Produced with three-dimensional glass elements, the result is a striking sports car look with a unique light signature. All the light functions are, for the first time, integrated in one module.

The cooling air intakes are smaller than in a vehicle with a similarly powerful combustion engine. Combined with the flatter front bonnet, this makes the Taycan look very sporty. The flaps integrated into the cooling air intakes not only control the air supply for the cooling and air-conditioning systems,

but also cool the brakes efficiently in a targeted way. The roof line slopes down steeply. A typical feature of a sports car is also the recess in the middle of the roof. The Taycan is also available with a large panoramic fixed glass roof on request, which does not require any transverse bows.

The headlights: High-tech with design aspirations

The lighting technology plays a crucial role in the striking front end and the high recognition factor of the Taycan. The following headlight systems are available for the Turbo and Turbo S:

- LED matrix headlights including PDLS Plus: the matrix deactivates segments of the permanent high beam cone in a targeted way. 84 individually controlled LEDs can be adjusted to the current situation by switching them off or dimming them. Vehicles in front or approaching vehicles are no longer dazzled, though the areas in between and next to them continue to be fully illuminated.

- These LED matrix headlights with PDLS Plus are also optionally available in a special version from Porsche Exclusive Manufaktur, with a three-dimensional circuit board graphic in the headlight housing as well as daytime running light elements in Glacier Ice Blue. With these, the headlights appear to be in this colour from certain viewing angles.

The side view: sporty proportions and sculptured surfaces

Short overhangs at the front and rear intensify the sporty proportions of the four-door model. The sleek cabin sits on a wide body, reinforcing the lean and muscular look. The typical Porsche flyline makes the vehicle appear sporty even when the car is at a standstill. The sculpted design, with strong recesses on the body and edges, creates an exciting interplay of light and shadow. The air outlets behind the front wheels are distinctive design features.

The flat door handles are flush with the doors and pop out electrically when required. Their visual appearance accentuates the distinct and modern overall impression of the vehicle. The same applies to the wheels, which have been optimised in terms of aerodynamics and weight. The highlights in

the extensive wheel range include a 21-inch, five-spoke forged wheel with two-tone look in Brilliant Silver/Black (high-gloss), based on the wheel design of the Mission E concept car. Wheels with carbon aeroblades are also available from Porsche Exclusive Manufaktur.

The rear: Porsche lettering in a glass look with pcb graphic as a highlight

The sleek cabin (the greenhouse), the drawn-in C-pillar and the pronounced shoulders of the wings emphasise the wide rear, typical of the brand. A narrow bar illuminated from the inside stretches across the full width of the vehicle. The Porsche logo made of three-dimensionally shaped glass letters is located in this. A unique feature besides the glass-effect design: The lettering is embedded in a three-dimensional black circuit board design. Porsche Exclusive Manufaktur optionally offers this graphic with dark metallisation and the deep glass letters in the colours Glacier Ice or Black .

The number plate is placed very low down. The aerodynamically efficient rear diffuser with a subtle louvred look visually completes the vehicle in a downward direction. A typical Porsche feature is the rear spoiler, which extends in three stages depending on the speed (see chapter on body and aerodynamics). The horizontally arranged lines of the rear and the pronounced shoulders of the wings further emphasise the deep, wide sports car look of the Taycan.

The interior design

Digital, simple, sustainable

The original 911's cleanly styled dashboard from 1963 was the inspiration. The stated goal was to bring it into the present day. The cockpit signals the start of a new era with its clear structure and a completely new construction. It is clearly driver-focused. The instrument panel has a clean, minimalist and ultra-modern design, and operating the controls is quick and free from distractions. The free-standing, curved instrument cluster forms the highest point on the dashboard. It is clearly focused towards the driver and ensures that everything that is needed for driving is in view.

The innovative instrument cluster consists of a curved 16.8-inch screen with the rounded look that is typical of Porsche. A cowl has been comitted, which ensures a slim and modern appearance in the style of high-quality smartphones and tablets. Drivers can choose between four display modes for the instrument cluster:

- The mode Power meter evokes the rounded instruments typical of Porsche. This display delivers information that is clearly arranged information, allowing for fast readability. A power meter replaces the rev counter in the middle instrument.

- The Map mode replaces the central power meter with a map layout.

- The Full Map mode intentionally omits the round instruments. In favour of a navigation map displayed across the full display.

- The view “reduced” is limited to the essential driving information such as speed, road signs and navigation instructions using a minimised arrow.

There are also small, touch-control fields at the edges of the screen for operating the light and chassis functions. The instrument cluster is therefore wider than the steering wheel and reminiscent of the original 911.

The steering wheel has a light appearance and is available in two models: in addition to the basic version, which can be customised with coloured inserts as part of the accent package, Porsche also offers a GT sports steering wheel option. It has a distinctive design with visible screw heads and features a typical Porsche round mode switch which can be used to select the various driving modes.

The wing-shaped upper and lower sections of the dashboard stretch across the entire width of the car. A central 10.9-inch infotainment display and an optional passenger display are combined to form an integrated glass band in a black-panel look, thereby blending in visually with the interior.

All user interfaces have been completely redesigned

The number of classic hardware controls such as switches and buttons has been greatly reduced. Instead, control is intelligent and intuitive – using touch operation or the voice control function, which responds to the command "Hey Porsche".

All vehicle configurations for the Taycan, such as Porsche Active Suspension Management (PASM), can easily be set up on the central screen via direct access. The driver can quickly access all apps via a clearly structured and customisable home screen. Apps include navigation, telephone, media, comfort and Porsche Connect. With optimised voice control, drivers can access the required function even faster. For the first time, front passengers in the Taycan have the option of their own touch display, allowing them to easily alter settings without distracting the driver.

The elevated centre console intensifies the feeling of a low seating position, as you would expect from a Porsche. It features a large 8.4-inch touch panel with haptic feedback. This allows the air-conditioning settings to be altered directly. Integrated handwriting recognition also allows quick address inputs.

Every detail has been reduced to the essentials. Like the Porsche 918 Spyder, the Taycan has a compact direction selector switch in the instrument panel instead of the classic selector lever. This gives the centre console a tidy look and creates storage space. A reduction to the essentials and a clear approach are also evident for the air vents. They have been fully modernised and can be operated intuitively. Traditional, mechanically operated louvres belong in the past, as airflows are now controlled

both digitally and fully automatically (Virtual Airflow Control). By clicking the Climate menu, it is possible to switch between “Focused” for fast, directional cooling and “Diffused” for draught-free air conditioning. If the optional four-zone automatic climate control system (Advanced Climate Control) has been ordered, an additional 5.9-inch touch control panel with haptic feedback allows the system to be operated from the rear seats.

A wide range of customisation options and innovative material concepts

The Taycan's colour and material design allows for individualised equipment, from traditional through to sustainable and modern. There is also the option of classic leather as well as the sustainably tanned Club Leather OLEA, which uses olive leaves in the tanning process. The natural quality of the leather is accentuated by a special cloud print. A new feature is the fully leather-free interior with state-of-the-art surface textures Race-Tex material is used. A high-quality microfibre material partially consisting of recycled polyester fibres. Its production has 80 per cent less CO_2 than traditional materials. The floor covering uses the recycled fibre Econyl®, which is made in an innovative production process from items including recycled fishing nets.

The Taycan is available with a wide range of interior and exterior configurations, in both traditional and modern styles. Interior accents and trims underline the attention to detail, while meeting the highest quality standards typical of Porsche in terms of material characteristics and workmanship. Interior colours Black-Lime Beige, Blackberry, Atacama Beige and Meranti Brown are exclusively available for the Taycan. The optional interior accent package also gives customers a choice of special contrasting colour schemes Customers can choose from Black Matt, Dark Silver or Neodyme, an elegant champagne tone. The doors and centre consoles have trim made of wood, matt carbon, embossed aluminium or fabric.

In addition to the host of innovations, there is another detail that no Porsche should be without. As with the ignition lock on conventional Porsche models, the power button is located on the left behind the steering wheel.

The body

Intelligent mix of materials for maximum strength

The fully galvanised body of the Taycan is a mix of the main materials aluminium and steel. The strut mounts, axle mounts and the rear side members are made of die-cast aluminium. The shock absorber mounts are forged aluminium. The front side members combine an aluminium shell construction with extruded sections. The 1,941-millimetre sills are designed as seven-chamber extruded sections. Compared to steel sills, this reduces the number of components per side from 15 to three.

Hot-formed steels protect the passenger compartment (A-pillar structure, B-pillar inside/outside, side roof frame, seat cross member). A special highlight is the bulkhead cross member, which is manganese-boron steel. Special manufacturing processes are used to produce various cross-sections within the tubular component. This results in maximum strength with optimised weight. Apart from the front and rear end components, the complete outer skin is made from aluminium. With a draw depth of 325 millimetres, the one-piece aluminium side panel posed a particular challenge for development and production. The total aluminium content for the Taycan is around 37 percent.

The low central installation position of the Performance Battery Plus ensures a very low centre of gravity. Its integration was an essential cornerstone in the design of the body. The aluminium housing of the underfloor battery was designed as a load-carrying component and forms part of the Taycan's safety structure. A total of 28 bolts are used to attach the housing to the body.

"Foot garages" – recesses in the battery in the rear footwell – provide improved rear seating comfort, while at the same time allowing for the low car height and flyline that are so distinctive in sports cars. The result is a low seating position and sufficient head clearance at the rear, despite the underfloor battery. Two luggage compartments are available: The front compartment has a capacity of 81 litres, and the rear 366 litres.

The panoramic fixed glass roof: a clear view without distracting roof bows

Due to its flat construction, the panoramic fixed glass roof blends harmoniously into the silhouette. Transverse bows were not required. This means the continuous area of the roof in the new Taycan measures one square metre, and as such provides an even more pleasant feeling of space and airiness. It is also possible to use a Porsche roof transport system.

For the first time in a Porsche, low-emissivity thermal insulation glass is used for the panoramic fixed glass roof. Several wafer-thin metal layers are applied to the insulating glass. As the thermal insulation glass allows short-wave radiation to pass through and reflects long-wave infra-red radiation, the vehicle interior will heat up more slowly in summer. This also means that the heat in the interior is retained longer in winter. In combination with the glass tint, it was therefore possible to dispense with a roller blind. An intermediate layer in the glass structure also provides acoustic insulation for the interior.

Aerodynamics

The best C_d value of all current Porsche models

With a C_d value from 0.22, the Taycan offers the best drag coefficient of all current Porsche models. The front surface area is 2.33 m^2. This results in an effective drag of 0.513 m^2. The outstanding aerodynamics make a significant contribution to low energy consumption and resultant long range. In addition to the optimised basic shape of the vehicle developed while remaining true to the Porsche design DNA, air curtains and Porsche Active Aerodynamics (PAA) are important special features.

The superb aerodynamic performance was achieved through extensive work on the design concept and fine tuning: before spending around 1,500 hours in the wind tunnel, the Taycan had already run through 3D CFD simulations (Computational Fluid Dynamics; numerical flow simulation) and completed around 900 hours in the wind tunnel as a 1:3 model.

The aerodynamic measures include air curtains: the headlights appear to float within large air inlets, which guide the air like a curtain over the front wheel housings. This reduces turbulence and – combined with the aerodynamically refined wheels – air resistance as well.

In the Taycan, it was possible to completely panel the underbody as there is no hot exhaust gas system. The suspension links are fully covered and equipped with air ducts. At the rear in particular, the aerodynamics experts have succeeded in making use of the freedom offered by a fully electric vehicle by implementing an extremely wide rear diffuser. This creates aerodynamic efficiency: the perfect combination of low drag and reduced lift.

Measures in the area of active aerodynamics include the lower side air intakes at the front. With their fully variable, individually controllable cooling air flaps, they supply the two radiators located towards the outside. At the same time, the flow onto the brakes is controlled as required, via a brake air duct. The chassis control unit continuously monitors the current thermal load on the brake discs and requests targeted cooling of the brake discs if necessary – for example on the race track.

Porsche Active Aerodynamics (PAA) thus offers several advantages at the front of the Taycan: When the cooling air flaps are closed, the system reduces drag and therefore increases range. When the flaps are open, PAA improves both the performance of the cooling system and the brakes at the same time. Control of the cooling air flaps is always demand-driven and depends on the driving mode, speed and cooling requirement.

The Taycan also has active aerodynamics at the rear: depending on the driving situation, the spoiler extends to three different positions and thus influences the car's drag and rear lift. This means it is possible for the new Taycan to be conditioned for best efficiency and range, with the lowest possible drag that is useful on long journeys. It can also be set up with the lowest possible lift on the rear axle to deliver characteristic Porsche sports car performance, for achieving the fastest lap times on a race track.

In addition to the classic elements of Porsche Active Aerodynamics, the new Taycan also makes use of the aerodynamic possibilities offered by its air suspension. Depending on the speed and the selected driving mode, a lower position is activated, which additionally reduces drag (see the chapter on suspension for details).

The powertrain

Pure performance

Breathtaking acceleration figures, typical sports car traction and superior, continuously available power output. These are the aspects that have to be fulfilled if you want to talk about a true sports car. The new Taycan meets these requirements. This makes it unique in its segment. The top Turbo S version of the Taycan can generate up to 560 kW (761 PS) overboost power in combination with Launch Control, and the Taycan Turbo up to 500 kW (680 PS) . The Taycan Turbo S accelerates from 0-100 km/h in 2.8 seconds, and the Taycan Turbo in 3.2 seconds. The top model reaches the 200 km/h mark in 9.8 seconds, while the Turbo takes 10.6 seconds. The range of the Turbo S is up to 412 kilometres, and up to 450 kilometres for the Turbo (according to WLTP). The top speed of both all-wheel-drive models is 260 km/h.

The Taycan is started by engaging the driving mode while the brake pedal is depressed. Alternatively, this can also be done by pressing a button. As with the ignition lock on conventional Porsche models, the power button is located on the left behind the steering wheel.

The electric motors: synchronous motors with hairpin winding

The Taycan Turbo S and Taycan Turbo have two exceptionally efficient electric motors, one on the front axle and one on the rear axle, thus making the cars all-wheel drive. Both the range and the continuous power of the drive benefit from the high efficiency of the permanently excited synchronous motors. The electric machine, transmission and pulse-controlled inverter are combined into a compact drive module. The rear axle module is installed parallel to the axle. The pulse-controlled inverter is mounted on this in a “balcony solution” to increase the luggage compartment volume. Thanks to its coaxial design, the front axle module is integrated into the front of the vehicle in a very small space.

Permanently excited synchronous motors have a rotor with high-quality permanent magnets that generate a natural magnetic field. The rotor thus moves in sync with the magnetic rotating field of the stator, which is why it is known as a Permanently excited synchronous motor. A pulse-controlled

inverter specifies the frequency of the rotating field in the stator, therefore determining rotor speed. On account of their structure, functionality and their excellent thermal behaviour, the Permanently excited synchronous motors are able to deliver the high performance typical for Porsche.

A special feature of the Taycan's electric motors is the hairpin winding. in which the solenoid coils of the stator consist of rectangular rather than round wires. The wires are bent and their shape — before they are inserted into the stator's laminated core — is reminiscent of that of hairpins, hence the name "hairpin". The open ends are welded together using a laser beam. The manufacturing process of hairpin technology is complex, but it allows the wires to be packed more densely and thus increase the amount of copper in the stator. While conventional winding processes have a copper filling factor of around 45 percent, it is just under 70 percent in this case. This increases power output and torque for the same volume. Another important advantage for a high-performance car like the Taycan is that a hairpin stator can be cooled considerably more efficiently.

The liquid-cooled synchronous motor on the front axle has an active length of 160 millimetres and an active diameter of 190 millimetres. Its counterpart on the rear axle is 210 millimetres long and has a diameter of 245 millimetres. All in all, the modules have the highest power density (kW per litre of package space) of all the electric powertrains on the market today.

Pulse-controlled inverters control the motors

The pulse controlled inverter is the most important component for controlling the electric motors. In the Taycan Turbo and Turbo S, a pulse-controlled inverter is mounted on each drive module on the front and rear axles. The pulse-controlled inverters convert the direct current supplied by the Performance Battery Plus into the alternating current required to drive the electric motors. The reverse happens during braking: Here they convert the alternating current obtained during recuperation into direct current for charging the battery. In the Taycan Turbo S, a pulse-controlled inverter with a maximum current of 600 amps is used on the front axle, which can generate even more power and torque than the 300-amp, pulse-controlled inverter of the Taycan Turbo. Both pulse-controlled inverters operate with a remarkably high efficiency of almost 98 per cent.

Power transmission: two-speed transmission unique to Porsche

On the front axle, the power of the electric motor is transmitted to the front wheels via a coaxial, compact one-speed planetary gear with an overall ratio of approx. 8:1 to an integrated spur-gear lightweight differential.

The two-speed transmission installed on the rear axle in the Taycan is an innovation developed by Porsche. First gear gives the Taycan even more acceleration from a standing start, while the long second gear ensures high efficiency and power reserves even at very high speeds.

The two-speed transmission is based on three shafts. In addition to the two spur gear stages, which technically represent the ratio of the second gear, a shiftable planetary gear set is also used, which enables a corresponding reduction for the very short first gear. Roughly 15 revolutions of the motor represent one revolution of the wheel. This results in a very high wheel torque of almost 12,000 Nm, which allows breathtaking acceleration from a standing start.

First gear is mainly used in Sport or Sport Plus driving modes. Launch Control is also available in these modes. The transmission remains in first gear for a relatively long time, then shifts into second gear with a shift overboost.

Second gear has a ratio of around 8:1 like the transmission on the front axle. Eight revolutions of the electric motor thus represent one revolution of the wheel. This enables a top speed of 260 km/h typical of a sports car and acceleration reserves at high speeds. The rear axle has a controllable differential lock.

Recuperation: recovering high levels of energy

In internal combustion engine vehicles, the kinetic energy present at the brakes is converted into heat during deceleration. With electric vehicles, it is possible to recover a large portion of this kinetic energy, use the electric motors as generators during deceleration, and feed the battery with the power generated.

In the Taycan, Porsche takes its own approach in a number of ways within these parameters:

- The maximum potential recuperation capacity of up to 265 kW is significantly greater than that of most competitors, decelerations of up to 3.8 m/s2 are recuperated.

- When the accelerator pedal is released, the Taycan is designed to always roll or coast as far as possible; the available kinetic energy is reserved for dealing with the driving route.

- Recuperation takes place only when the brake pedal is pressed, but then, as mentioned above, with a very high level of energy recovery.

With the strategy of controlling recuperation mainly via the brake pedal, the customer experiences reproducible and predictable deceleration behaviour which is independent of battery charge and temperature. Testing has shown that, Thanks to the Taycan's high recuperation output of up to 265 kW, approximately 90 percent of braking operations in everyday use are performed by the electric motors alone, without activating the wheel brakes. For this reason and for the first time ever, Porsche is prescribing a time-dependent replacement interval for the brake pads: they must be replaced every six years.

The driving modes: unrestricted choice of long range or maximum sportiness

The profile of the driving modes in the new Taycan essentially follows the same philosophy as in the other Porsche model series. This is supplemented by special settings to make optimum use of the possibilities offered by the purely electric drive. Four driving modes are available: Range, Normal, Sport and Sport Plus. In addition, individual systems can be configured as required in the "Individual" mode. A prerequisite for the Sport Plus and Individual modes is the Sport Chrono package (standard in the Turbo S), and which features the mode switch integrated in the steering wheel.

Range: The Taycan performs particularly efficiently in Range mode. The top speed is limited to between 90 and 140 km/h (adjustable) but can always be overridden by depressing the accelerator pedal. Driving in this mode means driving with the most efficient all-wheel distribution possible. In

extreme cases, the Taycan will even drive exclusively on the front axle. Cooling air flaps, chassis height (-20 millimetres) and rear spoiler are set to the minimum drag. Air conditioning, hydraulic pumps, air suspension and headlights also operate in their most efficient configurations.

Normal: In the basic setting, the Taycan delivers its power output on a linear basis. All four wheels are driven in efficiency mode. The cooling air flaps are only opened when necessary, the rear spoiler is adjusted depending on the speed and the chassis is lowered as required. Climate control and adaptive cruise control operate without restriction, the air suspension offers full comfort.

Sport: The highest performance of the powertrain is available in the Sport and Sport Plus modes. Driver requests are implemented dynamically. The all-wheel drive changes to rear-biased distribution and is dynamically controlled. The battery's cooling and heating strategy is designed for performance. The cooling air flaps are thermally controlled depending on the required cooling capacity, while the rear spoiler control is speed-dependent. The climate control regulates without restriction, the adaptive cruise control is more dynamic (including more powerful acceleration). And the cornering lights' functionality is also more dynamic. The air suspension lowers the Taycan by up to 22 millimetres depending on speed, while the suspension, including rear axle steering, is adjusted to a sporty setup.

Sport Plus "Sport Plus" puts an even more dynamic spin on the driver's style. As a result, the battery's cooling and heating strategy has been designed for maximum performance. At the same time, the cooling air flaps are opened, the rear spoiler is extended for minimal lift early on, The chassis setup, including rear axle steering and PDCC, is optimised for maximum race track performance, and the chassis permanently remains in the lowest position (-22 millimetres).

All the systems available on the powertrain are controlled by the Porsche powertrain controller. This is where all the information is collected and the high-speed actuators are controlled. The all-wheel drive and traction control systems operate five times faster than conventional systems. If one wheel has more slip, for example, the electric motors regulate it at lightning speed - a particularly impressive experience on snow and ice.

Driving performances: always convincing

The electric powertrain is capable of highly responsive acceleration. However, Porsche is also committed to ensuring that this can also be done multiple times in succession. The new Taycan Turbo S is therefore able to reproduce its impressive acceleration time of 2.8 seconds for the sprint from 0-100 km/h 10 times in succession without any problems. This acceleration performance is also impressive at high speeds. The new Taycan also proves its performance capability multiple times in succession without any drop in performance, for example when accelerating out of bends onto a long straight.

Launch Control: And full speed ahead!

Launch Control enables maximum acceleration from a standstill and is a standard feature in the Taycan. It uses an overboost function where the electric motors are provided with more power. In the Taycan Turbo S, a power output of 560 kW is provided at this point.

The Porsche sound

A special auditory experience

The sound of a Porsche is its acoustic calling card. Every fan knows the unmistakeable sound of a six-cylinder Porsche boxer engine. Powertrain sounds not only create an emotional connection with one's car but they are also an important early warning system for traction conditions, for example. Electric cars also have their own sound. The Porsche Electric Sport Sound in the Taycan Turbo S (optional for the Taycan Turbo) is skilfully composed and tailored to the vehicle's personality and vehicle status. What is more, all Taycan models also have a standard system to meet the legal requirements for pedestrian protection. This is harmoniously adapted to the Electric Sport Sound.

Hearing as an acoustic early warning system

Porsche already has experience with developing the sound of electric vehicles from the 919 Hybrid. The works drivers were only able to reach the limits of the multiple Le Mans winning car in the race simulator if the sound of the real engine matched what the car was doing. In the same way, drivers promptly perceive early information about driving conditions via their sense of hearing, which they can interpret intuitively: the characteristic hissing of the tyres provides information about the quality of the asphalt or how wet the road is. A change in the wind noise, for example, gives an indication of speed or crosswind. And the sound of the powertrain, engine and transmission characterises the power delivery and conveys identity-creating characteristics such as power or agility. The ear sends signals to the brain just as directly when the car's limit of traction is reached, as when drive or recuperation of power during deceleration is delivered.

The Porsche Electric Sport Sound makes the vehicle's own drive sound even more emotionally charged and richer with its innovative character both on the outside and inside. For this purpose, disturbing noises from the drive architecture are deliberately minimised and harmonious, emotive sounds matching what the car is doing are amplified. These are composed in such a way that a sound experience typical of Porsche is created: with a clear electrical statement but unquestionably

the sound of a genuine Porsche. The driver can activate and deactivate the Electric Sport Sound by selecting the Sport Plus driving mode directly in the Drive menu of Porsche Communication Management (PCM) or via the configurable joker keys.

Acoustic warning required by the legislator

In contrast, the Acoustic Vehicle Alerting System (AVAS) at low speeds cannot be switched off. The installation of such a generator for warning noises in electric cars has been mandatory in the European Union (EU) since 1 July 2019. The EU regulation prescribes an Acoustic Vehicle Alerting System (AVAS) for the protection of other road users up to a speed of 20 km/h. A similar situation applies in China and Japan. The regulation defines highly detailed framework conditions on how an AVAS noise may and may not sound. This applies, for example, to the minimum and maximum volume as well as to certain noise components. The equivalent regulation in the USA even requires a warning sound when the vehicle is stationary and requires an increase in the noise level until 32 km/h is reached.

The Porsche engineers also adapted this sound so that it is as emotive, sporty and powerful as possible within the framework of the legal regulations. The AVAS is faded out above the legally required speed ranges up to about 50 km/h. When Electric Sport Sound is switched on, the AVAS sound and the emotive sports sound blend harmoniously with each other.

The battery

Sophisticated thermal management, 800-volt system voltage

The Performance Battery Plus is located in the underbody of the Taycan, ensuring a low centre of gravity and thus sporty driving characteristics. The battery housing is a load-bearing component of the body structure, accommodating cooling and electronic components and protecting them from environmental influences.

The waterproof housing is a sandwich construction consisting of a cover at the top and a bulkhead plate at the bottom. The truss-design battery frame with multiple subdivisions is mounted in between. The cooling elements are glued on underneath the bulkhead plate. The battery housing is secured by means of a steel protective plate. For the battery frame, the developers opted for a lightweight aluminium design. On the one hand, this provides a lot of installation space for the cell modules - and consequently a high battery capacity. On the other hand, this has made it possible for the vehicle weight to be kept low. Modern joining techniques are used such as MIG welding (metal welding with inert gases) on the battery frame, laser welding on the bulkhead and protection plates and heat-conducting adhesive on the line system under the battery (see below).

800-volt system voltage: Less weight, faster charging

The Taycan is the first production vehicle with a system voltage of 800 volts instead of the usual 400 volts for electric cars. This enables consistent high performance, reduces the charging time and decreases the weight and installation space of the cabling.

The two-tier Performance Battery Plus used in the Taycan Turbo S and Taycan Turbo contains 33 cell modules consisting of 12 individual cells each (396 in total). The total capacity is 93.4 kWh. The cells themselves are so-called pouch cells. In this cell type, the stack of electrodes is not enclosed by a rigid housing, but by a flexible composite foil. This allows optimal use to be made of the rectangular space available for the battery and a reduction in weight.

The modules each have an internal control unit for monitoring voltage and temperature and are connected to each other via busbars. The foot garages – recesses in the battery in the rear footwell – provide the best possible seating comfort in the rear and allow the low vehicle height typical of sports cars.

Heat pump permits intelligent functions

The battery is integrated into the vehicle's cooling circuit via a line system and a coolant pump. It can be cooled or heated so that it always operates in an ideal temperature window. The cooling elements have been placed outside the actual battery box and are glued to its underside so as to allow heat transfer. The fundamental development aim was to dissipate as little heat as possible into the environment and thus be as energy-efficient as possible in winter.

The battery can also store the waste heat from the liquid-cooled high-voltage components. As a result, it serves as a thermal storage device or buffer, which permits intelligent functions such as conditioning to ensure driving performance: the target temperature of the battery is determined on the basis of the battery charge and the selected driving program. This ensures sporty driving performance and allows Launch Control to be used.

Depending on the outside temperature, the battery is preconditioned to a certain temperature level when the vehicle is connected to the mains for charging. The interior can be preconditioned independently of the mains.

The vehicle also predicts the electrical power consumption of the air-conditioning system and the conditioning of the components based on the outside temperature, humidity and sunshine, as well as the currently selected driving program and the respective setting of the automatic climate control system. The current range is calculated using these figures. In a parallel process, PIRM (Porsche Intelligent Range Manager) provides a background forecast for the other driving programs. When route guidance is activated, if the range calculation shows that the destination can be reached with a low battery charge, the system switches to a more energy-efficient driving programme and a different climate control mode.

Thermal management in the vehicle overall

Intelligent cooling and heating

Thermal management centres around a highly efficient, intelligent system for cooling and heating the high-voltage components. This applies in particular to the HV battery with 800-volt technology, but also to other components such as On-Board DC-Chargers, DC/DC converters, on-board AC-chargers and drive components such as electric machines, pulse controlled inverters and transmissions. The cooling circuit is linked to the vehicle cooling circuit as required.

This prevents potential power losses due to excessive heat generation by always delivering the cooling capacity to exactly the components needed. This ensures maximum flexibility for all operating modes and vehicle requirements typical for Porsche. At the same time, the optimum temperature is achieved when the charging station is reached.

On the hardware side, the thermal management system consists of a networked line system with a coolant radiator (front, left-hand direction of travel), three coolant pumps, six coolant valves, two fans and ten coolant temperature sensors. This is supplemented by the linked components from the air-conditioning system with a climate condenser (front, right-hand direction of travel), a separate evaporator (chiller) and a heat exchanger for air-conditioning/cooling (iCond).

The entire system is controlled via a sophisticated networked control unit.

Simply put, the amount of drive power available from the HV battery and whether it can be charged quickly depends on the charge level (SoC) and the cell temperature. This results in different temperature targets for the battery, depending on the initial state and the desired final state. The selected driving mode also plays a key role here. In Range mode, the drive, HV battery and minimal on-board power consumption are operated with the best possible efficiency (e.g. the speed of the coolant pumps is reduced). In contrast, in the Sport or Sport Plus modes the corresponding temperature targets for the coolant flow are selected for maximum performance of the electric machines and pulse controlled inverters.

The control range is considerably broader than for a conventional combustion engine vehicle, for example. The circuits used in the thermal management of the overall vehicle alone add up to more than 300 states in the Taycan. The optimum energy state at a particular moment is always calculated and adjusted from this. High availability targets, for example for Launch Control, are made possible by a significant and rapid decrease in the coolant temperature. Thermal pre-conditioning for extra quick charging at the calculated place of arrival or pre-calculated arrival time is also possible.

800-volt system voltage

High voltage for a top performance

The Taycan is the first fully electric production vehicle with a system voltage of 800 volts instead of the usual 400 volts. The technology with which Porsche won the 24 Hours of Le Mans in the 919 Hybrid in 2015, 2016 and 2017 is now making the leap into series production.

Shorter charging times and less weight, along with an adequate range, are the main challenges of high-performance vehicles with a purely electric drive. A voltage of 800 volts, double that of conventional systems, is an innovative solution from Porsche to meet the high charging and drive power requirements.

This is because either the voltage or current can be increased to boost power output. While increasing the current makes both plugs and cables heavier and therefore more unwieldy, increasing the voltage can significantly improve the charging performance – without sacrificing ease of use. Compared to increasing the current level, increasing the voltage also has the advantage that the additional losses due to the ohmic resistance are lower.

By doubling the voltage level, currents can be reduced in the vehicle while the power output remains the same, thus reducing the cross-section of the cable.

The charging process

Quick, comfortable, intelligent and universal

In addition to exciting cars, a customer-friendly charging infrastructure is the key to the lasting success of electric mobility. Taycan drivers can comfortably charge their vehicles with up to 11 kW of alternating current (AC) at home. On the road, they benefit from the vehicle's 800-volt technology and the ingenious temperature control strategy for the battery. The Performance Battery Plus allows the vehicle to be charged with higher currents (direct current, DC), thus speeding up the process significantly: in just over five minutes, the battery can be recharged for a range of up to 100 kilometres (according to WLTP). The charging time for five to 80 percent SoC (state of charge) is 22.5 minutes in ideal conditions at 800-volt high-power charging stations, with a maximum charging capacity (peak) of 270 kW.

The Taycan has charge ports in the two front side sections of the body. The vehicle can be charged on both sides using alternating current (in most markets), on the right-hand side it can also be charged using direct current. The connections are protected from the weather by electric charge port doors. A small ice-breaker ensures that they still work in heavy frost. This breaks up ice crusts, clearing the way for the port door. In this case, the port doors are opened by means of hand gesture. Alternatively, the electric charge port doors can also be operated from the interior via the centre console control panel.

For charging at 400-volt charging points, an on-board DC charger, initially with 50 kW and optionally 150 kW, is installed. An on-board AC charger with 11 kW for charging using alternating current is also installed. This fully and gently charges the battery in circa nine hours.

Porsche also offers the following charging equipment:

- With a capacity of up to 11 kW, Porsche Mobile Charger Connect is a quick and convenient way to charge the Taycan at home overnight.

- With the portable, three-kilogram Porsche Mobile Charger Plus (available from mid-2020), it can be charged at home or on the road with a maximum of 11 kW.

- Mode 3 cable: A 4.5-metre charging cable for charging at public alternating current charging stations.

- Home Energy Manager (HEM): The intelligent control centre can be integrated into the domestic power grid by an electrician and ensures problem-free and convenient charging at home. The Home Energy Manager optimises the charging process in terms of performance, time and costs. It also offers protection against overloading the domestic network (blackout protection) by reducing the charging power of the vehicle as required in the event of an imminent overload, thus preventing the domestic fuse from being triggered (blackout).

The Porsche Charging Service enables worldwide access to charging points from various providers. Central billing takes place via Porsche. More than 100,000 charging points will be linked in Europe by the time the Taycan is launched. Porsche is also supporting the global establishment of a fast-charging infrastructure, in some cases together with partners.

- In the pilot cities of Shanghai, Beijing, Tokyo, Osaka, Nagoya and London, Porsche Charging offers customers the opportunity to charge their vehicles at selected locations at four of their own high-power charging points (with up to 350 kW).

- As part of the joint venture Ionity – which also involves Audi, BMW, Daimler and Ford – Porsche will build around 400 high-power charging parks, with a capacity of up to 350 kW per charging point, across Europe by the end of 2020.

- In addition, more than 2,000 AC charging points in up to 20 markets are available from Porsche Destination Charging, at destinations such as hotels, for the launch of the Taycan.

- The Porsche dealer network will also be equipped with 800-volt high-power charging stations.

- In North America, the VW Group initiative, Electrify America, has offered charging with up to 350 kW at 300 highway stations since this year.

- Its subsidiary, Electrify Canada, is also pursuing the development of a high-power charging infrastructure to ensure long-distance mobility on motorways. By 2020, about 32 charging stations will be in operation in Canada.

- Charging as Mobility Service (CAMS) is a joint venture of the Volkswagen Group. The aim is to put into operation around 4,000 charging points in 20 major Chinese cities by 2020.

- In selected markets, Porsche is working with local partners on the development of a charging infrastructure with selectively installed, fast-charging corridors. By 2020, more than 60 charging stations are scheduled to be in operation in Australia, Brazil, Malaysia, Mexico, South Korea, Singapore, Taiwan, Thailand and the United Arab Emirates.

Service from Porsche

Charging made easy

According to a Porsche forecast, approximately 80 percent of Taycan owners will charge their batteries at home overnight. Porsche offers a multi-step review of owners' individual charging situations and extensive charging equipment for this purpose.

At the Porsche Charging Pre-Check, interested parties can find out at an early stage whether charging at their home is generally possible. In a short online survey, information on the living and parking space situation, existing power connections and Internet availability is collected. Based on the responses, the potential customer will receive an initial forecast. If an individual consultation is requested, prospective customers can forward their Pre-Check-ID to a Porsche Centre.

The Porsche Centres also offer the Home Check before the vehicle is purchased. An electrician will check the conditions on site and can also install the charging station at a later date. The Porsche Centre will receive a report from the home visit in order to be able to provide the customer with the best possible advice on the choice of charging equipment.

These charging stations facilitate charging at home:

- The Porsche Mobile Charger Connect combines intelligent charging functions with network and Internet connectivity. It can be used to charge the vehicle with 11 kW. With the "price-optimised charging" function, daytime and night-time periods, during which electricity is cheaper, are also used specifically for charging. Operation is intuitive via the five-inch touch display. Data such as the battery's current charging status and the remaining charging time can either be displayed on the screen or on a smartphone or tablet linked to it. Thanks to its WiFi functionality, the Mobile Charger Connect can also be networked with the Home Energy Manager so that intelligent charging functions can be used at home.

- With the Porsche Mobile Charger Plus (available from mid-2020), the Taycan can be charged at home or on the road with a maximum of 11 kW. With its compact dimensions and weighing less than three kilograms, it is easy to transport. A wall bracket is supplied and can be mounted in the garage. The Porsche Mobile Charger Plus is then simply and securely attached using a clip-in system. With the Porsche Charging Dock Pedestal bracket and the attractively designed Porsche Compact Pedestal, both chargers are protected against external influences such as rain or vandalism. The devices can be removed from the docks.

The Home Energy Manager ensures problem-free charging at home and optimises the charging process in terms of performance, time and costs. When properly installed in the domestic mains by a specialist, it continuously monitors the energy requirement and the available power output of the power supply.

In addition, the Home Energy Manager is able to carry out vehicle charging processes when other domestic electrical appliances are typically not in use. The Home Energy Manager can also manage the charging processes of multiple vehicles at the same time. This takes into account such factors as timelines, prioritisation and planned departure times. The Home Energy Manager also helps to reduce charging costs. If a customer has an electricity tariff with lower costs at certain times, the Home Energy Manager can schedule the charging process to this time slot.

Charging in Europe: Porsche Charging Service with more than 100,000 charging points

On journeys, customers can access the Porsche charging network via the Porsche Charging Service, which enables them to locate charging points and begin charging. Billing can also take place via centrally stored payment data. There is no need to register with the various operators. This is done across countries, at a guaranteed unit price per market, irrespective of currency. The relevant app and the Porsche navigation system guide customers to the selected charging station. The platform currently has over 70,000 charging points in twelve countries. More than 100,000 charging points will be linked in Europe by the time of the Taycan's market launch.

The app provides real-time information on the location and availability of the charging stations as well as the price of a charging process. Identification takes place at the charging point

- by QR code via the app or
- Via a Porsche ID Card, which users receive free of charge after registering for the service, or
- Via the Plug&Charge function where users just connect the charging plug.

An innovative feature is, among other things, the option of a rating function. This tells the user when a vehicle was last charged at a charging station and how up-to-date and reliable the information on the respective charging point is. The daily utilisation of the charging station is also displayed so that charging processes can be better planned.

In Germany, use of the Porsche Charging Service is included for the first three years. The fees for the charging processes themselves depend on the operator and the amount of electricity used. The prices are displayed in detail and, if requested, also graded according to power output class / charging speed. The app can be used on all mobile devices with iOS or Android operating systems. The service can be used by all drivers of hybrid or electric vehicles. The service is not limited to Porsche sports cars.

Ionity high-power charging network: 400 stations on major European transport routes

With the creation of the Ionity joint venture, the BMW Group, Daimler AG, Ford Motor Company and Porsche are paving the way for the most extensive high-power charging network for electric cars in Europe.

Ionity will build and operate a total of 400 high-power charging parks by the end of 2020. There are already 120 stations (as of: July 2019). These will be located on motorways and main transport routes in large parts of Europe. They will be publicly accessible and located at an average of 120 kilometres apart. Ionity is collaborating with strong business partners such as Tank & Rast, Shell and Circle K, and benefits in particular from the attractive locations of these partners. Each Ionity high-

power charging park will have multiple charging points. The network uses the European charging standard Combined Charging System (CCS). The charging capacity of 350 kW per charging point enables suitably designed vehicles such as the Taycan to charge much faster than with currently available systems.

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Porsche Charging Planner and Porsche Intelligent Range Manager

Intelligent range optimiser

The Porsche Charging Planner (availability is country-dependent) provides highly intelligent control of the charging process for on the road when it comes to fast charging. As soon as route guidance is active, the system assists the customer to travel in a relaxed manner and without unnecessary loss of time, even over long distances.

First, the navigation system calculates the fastest or shortest route, taking into account real-time traffic information. If the calculated charging status at the destination is less than 13 per cent, the Charging Planner takes charging stops into account in order to also ensure a minimum range at the destination. In Range mode, the value is six per cent. This exploits the range potential even further in order to avoid the need to stop and recharge.

The planning takes into account the power available at the stations and the resulting charging time for the optimum charging range of up to 80 per cent. Stations that are not directly on the route are also taken into account. This means that stations with higher capacities can be preferred, and the overall travel time can be further optimised. The respective charging times are taken into account for specification of the arrival time.

In order to make optimum use of the available maximum charging capacity, the system also regulates the preconditioning of the battery in good time before the charging stop. The Charging Planner is active throughout the entire route guidance process and continuously optimises the planned route, including charging stops, taking into account real-time traffic information. The Porsche Connect package for the Taycan includes the online functionality required for the Charging Planner for three years (country-specific).

Thanks to locally stored database entries, the Charging Planner can also make recommendations for charging stops offline.

The Charging Planner is also available in the Connect app for further convenience. This makes it easy to plan your trip in advance at home and transmit it to the vehicle.

Porsche Intelligent Range Manager

As an option, the range of functions of the Charging Planner can be extended with the Porsche Intelligent Range Manager. When route guidance is activated, the Charging Planner always acts in the background and once again optimises all the system parameters in order to achieve the shortest travel time with maximum comfort.

In the Normal, Sport, Sport Plus and Individual driving modes, the Porsche Intelligent Range Manager automatically optimises the route if the destination can be reached more quickly by making fewer charging stops while at the same time limiting the maximum speed, for example. The calculation runs automatically in the background. The alternative route is suggested for activation and can also be called up under “Alternative routes” in the Porsche Communication Management (PCM).

If the driver confirms the route, the Taycan automatically switches to the Range driving mode. In this way, routes with shorter journey times can be determined, particularly for long-distance journeys with charging stops.

In Range driving mode, the Porsche Intelligent Range Manager automatically changes the speed limit and the climate mode as required. While this allows the most economical driving possible in conjunction with the manual speed limitation and air conditioning settings, the Porsche Intelligent Range Manager dynamically optimises the routes on the basis of routing, topography, speed and traffic information. In this way the travel time can be kept to a minimum without sacrificing comfort.

The chassis

Committed to driving dynamics

From uncompromisingly sporty to comfortable: the chassis of the new Taycan offers a broad spectrum, with the choice between the precise handling of a sports car and the long-distance comfort of a saloon. The basic layout: at the front, Porsche uses a double-wishbone axle with forged aluminium wishbones and hollow-cast aluminium lightweight swivel bearings. On the rear axle, a multi-link axle with forged upper aluminium wishbones and hollow-cast lower aluminium wishbones performs wheel guidance.

Porsche 4D-Chassis Control: intelligent command centre

Porsche uses a centrally networked control system for the Taycan chassis. The 4D Chassis Control analyses the current driving situation in all three dimensions (longitudinal, lateral and vertical acceleration) and then calculates the vehicle status. It then shares this status with all the chassis systems in real time – adding a fourth dimension to chassis control. As a result, the systems provide an integrated response to the current driving situation.

PASM: real-time analysis and synchronisation

The Porsche Active Suspension Management (PASM) electronic shock absorber control system is included as a standard feature. The system responds to the road surface conditions and the current driving style, constantly adjusting damping for each individual wheel accordingly. Drivers can choose from four driving modes: Range, Normal, Sport and Sport Plus (for further details, see the Drive chapter).

So, how does PASM work? Sensors record the body movements generated during fast acceleration, braking, fast cornering or driving on uneven road surfaces. PASM sends the recorded data to the Porsche 4D Chassis Control. The command centre calculates the current vehicle status and regulates the damper characteristics and spring rates depending on the selected mode. Thanks to the three-chamber air suspension technology, different air suspension volumes can be switched within milli-

seconds. The 4D Chassis Control system also allows the control parameters of the other electronic suspension systems to be adjusted accordingly. The noticeable result: more driving stability, performance and comfort.

The Taycan uses a single-tube damper instead of a conventional twin-tube damper. This is not only lighter, but it also offers a better response and a greater balance between comfort and sportiness.

Adaptive air suspension: always at the right level

The Taycan's three-chamber air suspension provides a wide range of spring rates. This allows the chassis to be adjusted to a low basic spring rate and therefore made more comfortable. As soon as necessary, the spring rate is electronically adjusted in a fraction of a second - for example when accelerating and braking. Roll movements are reduced via volume control.

In addition, the air suspension offers the well-known advantages of ride height control. These include the fact that the vehicle height remains the same or at the desired level, regardless of the vehicle load. What is more, the frontal area can be reduced in two stages by lowering the front end, thus optimising the range. Three further levels are available in addition to the normal level, depending on the driving modes. In the Range and Sport Plus modes, the chassis is always in the lowest position (-22 millimetres):

- The lift level raises the chassis by 20 millimetres to prevent the front spoiler from bottoming, for example when entering an underground car park. This level can be set at speeds up to 30 km/h.

- From a speed of 90 km/h, the Taycan is lowered by ten millimetres.

- And when 180 km/h is reached, the body is automatically lowered by a total of 22 millimetres to improve road holding and aerodynamics at high speeds.

PDCC Sport active roll stabilisation: quick to react and efficient

The active roll stabilisation system, Porsche Dynamic Chassis Control Sport (PDCC Sport), uses electromechanical anti-roll bars. When required, the system reacts in just 200 milliseconds in order to stiffen the anti-roll bars to prevent the body from rolling. This makes PDCC more than 30 per cent faster than similar systems using hydraulic actuators. A further advantage is the lower energy consumption of the system, which is particularly important for an electric vehicle and allows the electric range to be optimised.

Porsche Torque Vectoring Plus (PTV Plus): more agile self-steering

Porsche Torque Vectoring Plus (PTV Plus) uses an electronically controlled differential lock on the rear axle for variable distribution of the drive torque between the rear wheels. On the one hand, additional yaw torque can be generated on the rear axle by braking the inner wheel on the bend. This ensures that the vehicle's steering response is even more agile. On the other hand, it improves traction by specifically locking the differential when accelerating out of corners.

Rear axle steering: maximum steering precision and easier manoeuvring

Rear-axle steering is available as an option (standard in the Taycan Turbo S). This further increases comfort, driving safety and driving dynamics. The vehicle steers without delay and builds up lateral acceleration at the rear axle much sooner. The result is even more impressive steering precision.

At low speeds of up to about 50 km/h, the rear wheels steer in the opposite direction to the front wheels. The steering angle depends on the driving speed and is a maximum of 2.8 degrees. This virtual shortening of the wheelbase results in a more dynamic steering response when cornering. At the same time, manoeuvring is easier as the turning circle has been reduced by around 60 centimetres to 11.2 metres. In addition, with rear-axle steering, the Taycan automatically features Power Steering Plus with greater support for steering assistance at low speeds.

At speeds exceeding approximately 50 km/h, the rear wheels steer in the same direction as the front axle, again depending on the speed. The wheelbase is therefore virtually lengthened, thereby increasing stability, for example when changing lanes on the motorway.

The brakes: high-performance systems with ceramic materials

The Taycan Turbo is equipped with the high-performance Porsche Surface Coated Brake (PSCB) as standard. The brake discs are 415 millimetres and 365 millimetres in diameter (front/rear axle). The tungsten carbide layer applied to the grey cast iron discs increases braking performance and wear resistance. At the same time, there is a reduction in the amount of brake dust making the rims dirty. The PSCB is of particular interest for electric vehicles. This is because, depending on driving style, the conventional brake is used less frequently due to recuperation, the PSCB always results in shiny brake discs due to its high resistance to corrosion.

The top system is the Porsche Ceramic Composite Brake (PCCB) - standard for the Taycan Turbo S and optionally available for the Taycan Turbo. The lightweight ceramic composite brake discs are 420 and 410 millimetres in size respectively on the front and rear axles. The Turbo and Turbo S have ten-piston, aluminium monobloc fixed-caliper brakes at the front. The calipers are painted white (Turbo) or yellow (Turbo S).

Braking behaviour and braking sensation remain consistent thanks to the blended braking system – regardless of whether the battery is cold or warm, full or empty.

The wheels: two sizes, many designs

The wheel range comprises 20-inch (Taycan Turbo series) and 21-inch (Taycan Turbo S series) sizes. The summer tyres of the 20-inch wheels (front 245/45 R 20, rear 285/40 R 20) are range-optimised. The tyres of the 21-inch wheels (front 265/35 R 21, rear 305/30 R 21) are highly performance-oriented. All-season tyres are available for both wheel sizes, and winter tyres are available in the 20-inch dimensions.

All the wheels have been aerodynamically optimised. In addition to numerous paint finishes, for example Aurum or Deep Black Metallic, Exclusive Design wheels with carbon aeroblades also provide options to customise the vehicle.

Passive safety

High-tech lightweight construction with structurally integrated battery housing

The Porsche Taycan has a newly designed high-tech lightweight body which accommodates the electric powertrain and the Performance Battery Plus. All the components have been designed and optimised with lightweight construction in mind. The high-voltage battery with its internal load paths is cleverly integrated into the bodyshell structure.

The battery modules are built into the battery frame in such a way that maximum passive and high-voltage safety is achieved in the event of a crash. The structurally-integrated battery housing consists of different levels. At the centre of this design is the battery frame, which consists of a seal-welded, lightweight aluminium structure. As a result, optimum weight is achieved. A truss structure inside the particularly rigid all-round frame and crash box elements provides additional protection in the event of an impact. A steel plate protects the battery and the cooling structure against damage from below.

The crash sensors of the Taycan were developed to meet the specific requirements of electric vehicles. Additional sensors are therefore used to reliably disconnect high-voltage equipment in the event of a crash. Also in the event of an accident where the airbag is deployed, the battery connection to the vehicle is disconnected as a precaution so that no voltage is live. In the event of an accident, several high-voltage disconnection points in the vehicle enable the emergency services to intervene quickly and safely. All the fuses and busbars are located centrally in the vehicle. The battery management system, including the disconnection unit, is also located in a protected area in the centre console.

Crash load paths: new approaches for a new era

The newly developed front end design makes it possible to engineer the load paths in such a way that the crash requirements are met and space is gained for an additional large luggage compartment in the front end. Pedestrians are protected by an active bonnet.

In a side crash, the high forces generated are dissipated via both the bodyshell and the structurally integrated high-voltage battery. This concept enables the Taycan to achieve maximum passive safety and occupant protection coupled with minimum weight.

All the structural load paths relevant in a rear-end crash are made of aluminium to optimise weight. For the rear structure, casting technology is used at several structure nodes. Less material was required due to the optimised geometrical design and functions could be integrated at the same time.

Safety equipment: eight airbags as standard

Alongside the crash-optimised body, extensive passive safety systems ensure maximum protection. Depending on the seating configuration, four or five three-point belts with force limiters are fitted as standard. The Porsche Side Impact Protection System consists of side impact protection elements in the doors, and thorax airbags that are integrated in the side bolsters of the front seats. The side protection system is rounded off by curtain airbags covering the entire roof frame and side windows from the A to the C pillar. Classic full-size airbags and one knee airbag each for driver and front passenger are available at the front. In total, the new Porsche Taycan features eight airbags as standard. Side airbags are offered as optional equipment. ISOFIX brackets on the outer rear seats ensure that appropriate child seats are securely anchored (optionally also on the front passenger seat with a front passenger airbag deactivation function).

The assistance systems

Support in all situations

The new Taycan features a host of comfort and assistance systems. They not only make the vehicle safer but also make journeys more comfortable. There are also numerous sophisticated sensors that scan the environment around the vehicle using ultrasound, radar and camera systems. In combination with wireless mobile communication and a powerful central control unit, the vehicle is able to process the information provided by the sensors and assist the driver in real time.

New: Rear-end collision alert

Porsche presents an innovative new assistance system with the new Taycan: RECAS (Rear End Collision Alert System). which actively warns the traffic behind of a potential rear-end collision. The system continuously monitors following traffic and calculates the probability of a possible collision from the vehicle's own speed and that of traffic behind the vehicle. If this danger is detected, e.g. when approaching the tail end of a traffic jam, the system automatically activates the hazard warning lights to warn traffic behind, thereby encouraging drivers approaching the rear of the vehicle to brake.

Comfortable and efficient: Porsche InnoDrive

Porsche InnoDrive offers optimised speed control for additional comfort, higher efficiency and a driving experience typical for Porsche. Based on navigation data together with radar and video sensors, the driving speed is, in advance, adapted to speed limits and road topology (gradients, bends). Acceleration and deceleration (including coasting) are controlled by Porsche InnoDrive. The system's ability to anticipate distances of up to three kilometres, as well as real-time optimisation of the driving strategy, enable harmonious and efficient journeys. Porsche InnoDrive also automatically adjusts the speed to allow for bends, roundabouts and speed limits. It detects the distance to the vehicle in front and controls it even when a vehicle cuts in from the side.

The basic design of the system is engineered for maximum comfort. It optimises the driving style in order to achieve the highest possible degree of smoothness with as few acceleration and braking processes as possible. On the other hand, Porsche InnoDrive in Sport mode offers the driver the possibility of driving dynamically and yet appropriately even on unfamiliar routes. Although the driving style is then dynamic, it remains well below the vehicle's limits.

Additional functions of Porsche InnoDrive:

- Active Lane Keeping Assist enhances the distance control and lane keeping functions on well-developed country roads and motorways. The system takes into account traffic ahead and road markings within the system boundaries, and keeps the vehicle in the middle of the lane through continuous steering interventions — including in traffic jams.

- Swerve Assist can help the driver to steer the vehicle around an obstacle in a critical avoidance situation.

- Intersection Assist can warn the driver (visually, acoustically and with a braking jolt) if crossing or oncoming road users are overlooked at an intersection.

Air conditioning

Fully automatic climate comfort

Porsche adds extra intelligence to the air conditioning system: In the Taycan, the air vents are electrically controlled and, for the first time, integrated into the fully automatic control of the air conditioning system. Drivers and passengers benefit from this innovative system in various ways: with the clean, louvre-less appearance of the air vents, as well as intuitive, fast operation and further improved acoustic properties.

The integration of the electric vents makes it possible to offer two automatic modes: tapping the "Ventilation" button once on the centre console control panel displays the ventilation menu on the centre display. The automatic modes "Focused" for direct, fast air conditioning and "Diffused" for draught-free air conditioning can then be selected.

An Individual mode can also be selected. Airflow direction from the side and centre vents can then be adjusted individually. Individual air-conditioning preferences are stored as part of the personalisation process, allowing several users to access their own settings in the vehicle: one individual setting can be stored for each vehicle key and a further eight for each vehicle. The desired temperatures can be selected on the touch control panel.

Operation of the air conditioning system therefore takes place in the background, with a feel-good climate being created more or less automatically. The driver and passengers can then focus on the driving experience.

The innovative Advanced Climate Control system is a two-zone, automatic climate control system that comes as standard. If the Advanced Climate Control four-zone, automatic climate control system is ordered as an option, this can be controlled in the rear via a 5.9-inch touch display. The two seats' air conditioning modes are individually adjustable, and operation is carried out in accordance with the "Individual" mode selected at the front. Depending on the equipment, the seat heating in the rear can also be controlled via the display.

The effort Porsche developers put into climate comfort is also shown by the following detail: depending on whether the Taycan comes off the assembly line with an aluminium or glass roof, it receives specially configured software for the air-conditioning system.

A heat pump is optionally available. It uses the waste heat from the powertrain to efficiently heat the vehicle interior. At outside temperatures below 20 degrees Celsius and with activated air conditioning, the heat pump helps to save energy and has a positive effect on the range.

The equipment

Customisation options

With LED matrix main headlights including Porsche Dynamic Light System Plus (PDLS Plus), Advanced Climate Control (2 zones), multifunction sports steering wheel, leather upholstery and 14 electrically adjustable comfort seats, the standard equipment of the Taycan Turbo is already extensive in the basic model. The Taycan Turbo S features 18-way electrically adjustable adaptive sports seats, a leather-free two-tone design and rear-axle steering, Sport Chrono package and Porsche Electric Sport Sound.

Also as standard is Porsche Communication Management (PCM), including online navigation, Porsche Charging Planner (PCP) , mobile phone preparation, audio interfaces and voice control. The Porsche Connect package (country-specific equipment; 36-month use included in many markets) includes music streaming via Apple® Music and online radio, remote and e-mobility services (including charging and range management as well as parking air conditioning) and numerous other Porsche Connect services. The standard Porsche Vehicle Tracking System (PVTS) monitors the vehicle and automatically detects theft.

The standard BOSE® Surround Sound system has 14 speakers, including a subwoofer and 14 amplifier channels, and a total output of 710 watts. The BOSE® Centerpoint 2 technology enables the playback of stereo sources in surround mode. AudioPilot Noise Compensation Technology ensures a consistent, balanced sound profile. With BOSE® SoundTrue Enhancement Technology, the sound quality and dynamics of data-compressed formats such as MP3 are enhanced.

Thanks to Over-the-Air Technology (OTA), software updates are possible even after the vehicle has been purchased, and individual vehicle functions can also be made available for a specific period of time (“Functions on Demand”).

The following functions are available for the Taycan launch:

- Comfort Access
- Power steering Plus
- Porsche Intelligent Range Manager

Taycan Turbo S with an even sportier look

The Taycan Turbo S and Taycan Turbo also differ in some exterior details. Here is an overview of the most important differentiating features:

	Taycan Turbo	**Taycan Turbo S**
Lower front part inlay	Painted in exterior colour	In Carbon
Side window trims	High-Gloss Silver	High-Gloss Black (High-Gloss Silver optionally available)
Door sill-guards	Brushed aluminium in Silver	Matt Carbon, illuminated
Side sills	In Black with inlay painted in exterior colour	SportDesign sill trim with Carbon inlay
Lower shell of the exterior mirrors including mirror base	Painted in exterior colour	Painted in exterior colour, mirror base painted in High-Gloss Black
Rear diffuser inlay	Painted in exterior colour	In Carbon
Model designation on tailgate	In Silver	In High-Gloss Black
Porsche emblem on wheel hub covers	Monochrome	Colour

Distinctive look and more comfort on request

For an even more dynamic look, the SportDesign package (for the Taycan Turbo), the SportDesign package Black (high-gloss) and the SportDesign package Carbon (for the Turbo S) are available. The front upper part, sill panels and rear diffuser have a unique design. The inlays and side fins of the diffuser are painted in the exterior colour, or in Black (High-Gloss) or are made of carbon. The front number plate holder is always painted in the same colour as the exterior. The SportDesign sill panels and the front aprons are also available individually.

The exterior package provides an individual look with glossy accents. The inlays of the lower front apron, sill panels and rear diffuser as well as the exterior mirror bases are painted in Black (High-Gloss). The lower shells of the exterior mirrors match the colour of the exterior.

Other interesting options:

- The ioniser improves air quality in the vehicle interior.

- The Burmester® 3D High-End Surround Sound system uses 3D high-end surround technology for a fascinating spatial and homogeneous sound. Overall power output: 1,455 watts. On board are 21 individually-controlled loudspeakers, including an active subwoofer. The Sound Conditioner sensitively adjusts the sound to the respective driving situation in real time.

The history

Porsche, the electrical pioneer

The electric powertrain is embedded deep in the Porsche DNA. Ferdinand Porsche, later the founder of the company of the same name, was fascinated by electricity even as a teenager. As early as 1893, the 18-year-old installed an electric lighting system in his parents' house. In the same year Porsche joined Vereinigte Elektrizitäts-AG Béla Egger in Vienna. After four years there, he progressed from mechanic to head of the testing department. The first vehicles he designed also had electric drives — so the history of Porsche begins with the electric drive.

In 1898, Ferdinand Porsche designed the Egger-Lohner C.2 Phaeton. The vehicle was powered by an octagonal electric motor, and with three to five PS it reached a top speed of 25 km/h. In 1899, Porsche joined the carriage maker in Vienna, k.u.k. Hofwagenfabrik Ludwig Lohner & Co.

There he developed the electric wheel hub motor. In 1900, the first Lohner-Porsche Electromobile with this innovation was presented at the Expo in Paris. With 2 x 2.5 PS it reached a top speed of 37 km/h. Lohner's reason for a vehicle with an electric motor sounds as topical today as it did then, especially in relation to the era of mass motorisation: the air was "ruthlessly spoiled by the large number of petrol engines in use".

Also in 1900, Porsche designed the world's first functional hybrid car, the "Semper Vivus" (Latin for "always alive"). The technology, marketed as the Lohner-Porsche system, also had applications beyond the sphere of electric vehicles. Porsche extended the car's range by not using a battery as an energy source, but instead using a combustion engine to drive a generator and thus supply the wheel hub with electrical energy. One year later, the production-ready version was born as the Lohner-Porsche "Mixte".

However, the Lohner-Porsche also demonstrated why electric mobility has failed over the decades: despite its modest power output, the car weighed almost two tonnes. The lack of infrastructure and the short range put an end to electromobility for a long time.

The idea was resurrected more than 100 years later: With the development of lithium-ion batteries suitable for use in vehicles and ever more stringent legal requirements for pollutant and carbon dioxide emissions, the focus turned once more to electric drive systems. With the Cayenne S Hybrid in 2010, Porsche paved the way for electromobility in the company. As the first parallel full hybrid in the luxury car class, the Panamera S Hybrid was the most economical Porsche to date with a fuel consumption of 6.8 l/100 km (NEDC), despite a power output of 380 PS. Also in 2011, Porsche tested three all-electric Boxster E models.

Panamera and Cayenne Turbo S E-Hybrid: Top models with two hearts

The production-ready 918 Spyder was presented in 2013 (see below). Two years later, the Panamera S E-Hybrid once again led the way in the segment as the world's first plug-in hybrid – now with 306 kW (416 PS) and a purely electric range of 36 kilometres. In the second Panamera generation, Porsche embraced electric performance across all model variants: the boost strategy adapted from the 918 Spyder super sports car enabled performance of the kind typically associated with sports cars, but combined with high efficiency — both in the 340 kW (462 PS) Panamera 4 E-Hybrid and in the top model, the Panamera Turbo S E-Hybrid.

The third generation of Porsche's plug-in hybrid drive, the Turbo S E-Hybrid, now powers the top versions of the Panamera and Cayenne. They combine exceptional performance with maximum efficiency: a four-litre V8 engine and an electric motor generate a system output of 500 kW (680 PS). These models are the sportiest vehicles in their respective segments, not despite but because of their hybrid drive.

The fast electrics – from the race track to the road

Not only competition for customers, but also competition on the race track, is firmly anchored in Porsche's genes. And right from the start, the sport has been the driving force behind the series.

A 50-kilometre race took place as part of the Berlin Motor Show as far back as 1899. The Lohner-Porsche Electromobile won first prize. In the next year, Ferdinand Porsche designed the world's first all-wheel drive passenger car, the "La Toujours Contente" ("The Always Satisfied") electric

race car. Each of the four wheel hub motors had a power output of 14 PS. Reduced to two engines of the same power output, Porsche succeeded in breaking the record on the Semmering with another electric race car at an average speed of 40.4 km/h over ten kilometres, with a top speed of 60 km/h.

In 1902, Porsche won the Exelberg Rally with the hybrid vehicle, the Lohner-Porsche Mixte. And in 1905, the Lohner-Porsche battery-powered race car with 2 x 30 PS reached speeds in excess of 130 km/h.

911 GT3 R Hybrid: first racing car with a partially electric drive

Even in modern times it was completely logical for Porsche to implement the electrification of the powertrain on the race track at a very early stage. This is why Porsche sent the 911 GT3 R Hybrid to the Nürburgring in 2010 as the first race car with a partially electric drive. The race car was powered by a 4.0-litre six-cylinder engine with 353 kW, supported by two electric motors with an output of 60 kW each on the front axle. Even then, Porsche opted for permanently excited synchronous motors. When braking, the two electric motors acted as generators and charged a flywheel accumulator with the kinetic energy recovered. As a mobile test laboratory, this technology platform provided important findings for hybrid technology in road sports cars, such as with regard to the management of high electricity and energy flows.

918 Spyder: Breaking records on the Nürburgring Nordschleife

In 2013, these findings benefited the powerful 918 Spyder, which broke the previous lap record for production cars on the Nordschleife with a lap time of 6:57 minutes. The innovative plug-in hybrid system of the high-performance sports car also relied on three motors: the high-revving, naturally aspirated V8 engine with a displacement of 4.6-litres produced 447 kW, while the two electric units on the front and rear axles together delivered 210 kW. The result is a system output of 652 kW (887 PS). The maximum system torque added up to a crankshaft-equivalent torque of 1,280 Nm. A lithium-ion battery with a capacity of 6.8 kWh stored the recovered braking energy and enabled an electric-only range of up to 31 kilometres. The Porsche 918 Spyder achieved an average of 3.1 to 3.0 l/100 km according to NEDC.

919 Hybrid: Series winner in endurance

The 919 Hybrid also left the production line for the first time in 2013. Porsche had decided to start again with an LMP1 prototype in 2014 at the 24 Hours of Le Mans and in the World Endurance Championship. In 2015, Porsche achieved the first of three consecutive Le Mans victories. The company rounded off this chapter of its motorsports history at the end of 2017 with six World Championship titles.

The 919 Hybrid is the most complex race car Porsche has designed and built to date. Many components and concepts with which it established itself as the most successful Class 1 prototype found their way into road vehicles such as the Panamera Turbo S E-Hybrid.

Technology pioneer: 800-volt designate the racing sport genes

Further developments from the 919 Hybrid project will be ready for series production in the near future, while others look even further ahead. They have also paved the way for the new Taycan — with technical elements that have had their baptism of fire at Le Mans. This applies in particular to the pioneering 800-volt technology. It is one of the most courageous fundamental decisions of the innovative race car concept. The voltage level establishes the fundamental conditions for the entire electric powertrain: from the battery to the layout of the electronics and the electric motors, to the performance capability of the charging process.

Appropriate components were not available on the market when the 800-volt technology for the 919 Hybrid was developed. Porsche has done pioneering work and developed it itself. The high competitive pressure of motorsports continuously pushes the engineers to the limits of what is possible. In terms of hybrid management, the Le Mans prototypes also advanced into regions previously considered unattainable. In this way, the 919 Hybrid as a rolling test laboratory paved the way for the voltage level of future hybrid and electric powertrain systems.

The permanently excited electric synchronous motor of the 919 Hybrid also passed the Le Mans baptism of fire. It drives the front axle and recovers kinetic energy as a generator during braking phases. The electric motor is similar to the two modules which together will deliver more than

441 kW in the Taycan. And unlike today's electric drives, they also deliver their full power for multiple accelerations over short intervals — just as the powertrain of the 919 Hybrid did over full 24-hour racing distances. This is just as crucial for race track use as it is for sporty driving on country roads and superior performance on the motorway.

The first fully electric race car from Porsche is now also ready for action. Starting in the 2019/20 season, Porsche will compete in the ABB FIA Formula E Championship with a newly developed power-train. Here too, the close interaction of racing and series development ensures smooth feedback.

Fun facts

Surprising and unusual details

- Thanks to the Taycan's high recuperation output of up to 265 kW, approximately 90 percent of braking operations in everyday use are performed by the electric motors alone, without activating the wheel brakes. For this reason and for the first time ever, Porsche is prescribing a time-dependent replacement interval for the brake pads: they must be replaced every six years.

- Thanks to 800-volt technology, around four kilograms of copper could be saved in high-voltage cabling. The higher voltage makes it possible to achieve the same power output at a lower current. This is the decisive factor for the size of the cable diameters.

- From 1 July 2019, new electric cars in Europe must be equipped with an Acoustic Vehicle Alerting System (AVAS). At speeds between 0 and 20 km/h and when reversing, a warning sound must be generated automatically. The volume must be at least 56 dB(A) and must not exceed 75 dB(A) at 20 km/h.

- Many parameters are included in the calculation of the remaining range, including the consumption history. If the battery is fully charged, roughly the last 600 kilometres are used. If, on the other hand, it is almost empty, only the last approximately 10 kilometres are used for the calculation.

- The thermal imaging camera of the optional Night Vision system can detect people and animals (from the size of a deer) up to a distance of 300 metres. The system is able to classify the relevant thermal source and to distinguish an animal from a parked motorcycle with a warm engine, for example. The system is deactivated in built-up areas to avoid possible false alarms, arising from dogs on a lead on the pavement, for example.

- The name Taycan originates from the Oriental language region. The name translates as "spirited young horse", and thus captures the focal point of the Porsche crest: Porsche has had a rearing horse on its crest since 1953.