



PORSCHE



The technology behind the new Porsche 911

Press Kit

Contents

New body, increased performance and expanded assistance systems

The new Porsche 911 **3**

Engine and drivetrain

Enhanced power, greater efficiency **5**

Chassis and brakes

Motor racing technology: mixed tyre diameter and width for the first time **9**

Body and aerodynamics

More rigid body with even higher aluminium share **13**

Electrics and electronics

Intelligent LED headlights for better visibility **16**

911 Carrera S: Fuel consumption combined 8.9 l/100 km; CO₂ emissions combined 205 g/km

911 Carrera 4S: Fuel consumption combined 9.0 l/100 km; CO₂ emissions combined 206 g/km

The consumption and CO₂ emission values were determined in accordance with the new Worldwide Harmonised Light Vehicle Test Procedure (WLTP). The NEDC values derived from this should continue to be specified for the time being. These values cannot be compared to the values determined in accordance with the NEDC measuring procedure used up to now.

Further information on the official fuel consumption and official, specific CO₂ emissions of new passenger cars is available in the "Guidelines on fuel consumption, CO₂ emissions and power consumption of new passenger cars" [Leitfaden über den Kraftstoffverbrauch, die CO₂-Emissionen und den Stromverbrauch neuer Personenkraftwagen], which are available free of charge from all sales outlets and from Deutsche Automobil Treuhand GmbH (DAT).

New body, increased performance and expanded assistance systems

The new Porsche 911

Wider, faster, more emotional – the Porsche 911 is entering the new generation with a host of new developments. The design and interior combine classic styling with completely new solutions. The new PASM chassis with wider track widths features wheels with different diameters on the front and rear axles for the first time. The turbocharged flat-six engine of the 911 Carrera S and 911 Carrera 4S produces 331 kW (450 PS) thanks to optimisations both within and outside the engine. This corresponds to an increase of 22 kW (30 PS). The power is delivered by a completely newly developed eight-speed dual-clutch transmission. The steering is even more direct and the brakes are also more responsive. The 911 is setting new records: a 911 Carrera S has completed the Nordschleife of the Nürburgring in just 7:25 minutes – five seconds faster than the previous model.

Both new 911s come in below the four-second mark for acceleration from zero to 100 km/h, with the 911 Carrera S taking 3.7 seconds, and the 911 Carrera 4S with all-wheel drive 3.6 seconds; each model is 0.4 seconds quicker than its predecessor. Both models are a further 0.2 seconds faster with the optional Sport Chrono Package. The fuel consumption (NEDC-correlated) of the 911 Carrera S is 8.9 l/100 km, while the 911 Carrera 4 S records this figure as 9.0 l/100 km.

The exterior design is completely new and emphasises the leap in performance for this generation of 911. In future, the rear-wheel-drive 911 Carrera S will also have the all-wheel-drive model body that is 44 mm wider at the rear. Both models are 45 mm wider at the front axle. Between the new LED headlights, a bonnet with a pronounced recess evokes the design of the first 911 generations. The almost flush integration of the electrical pop-out door handles emphasises the tapered and smooth side contour. The rear spoiler is dominated by a significantly wider rear wing and seamless, elegant light bar spanning the entire width of the vehicle. Apart from the front and rear sections, the entire outer skin is now made from aluminium.

The completely new interior is characterised by the clear and straight lines of the dashboard with recessed instruments. Alongside the central rev counter – typical for Porsche – two thin, frameless freeform displays supply information to the driver. The now 10.9-inch centre screen of the Porsche Communication Management (PCM) can be operated quickly and intuitively thanks to the new archi-

ture. In terms of digitalisation, the 911 takes the next step into the future with permanent connectivity as well as new functions and services. As standard, the PCM features online-navigation using swarm-based data and Porsche Connect Plus.

New assistance systems increase safety and comfort.

The new 911 is the first in the world to feature an innovative system for recognising significant wetness on the road, including the Wet driving programme that can be manually selected at any time. The warning and brake assist system, also fitted as standard, detects the risk of collisions with vehicles, pedestrians, and cyclists, and initiates a warning or emergency braking if necessary. Night Vision Assist with a thermal imaging camera is optionally available for the 911 for the first time. Adaptive cruise control, available on request, comprises automatic distance control with a stop-and-go function and reversible occupant protection. The optional LED matrix headlights each have 84 LEDs with individual control to ensure optimum light distribution for the relevant situation. Porsche has extended the list of comfort options to include an ioniser. This improves the quality of the air inside the vehicle, acting in combination with the standard fine dust filter.

Engine and drivetrain

Enhanced power, greater efficiency

The new 911 also brings a new generation of turbocharged flat-six engines. Advanced development has been primarily focused on further enhancing performance, alongside meeting the latest emissions standards by including a gasoline particulate filter (GPF). New, larger turbochargers with symmetrical layout and electrically controlled wastegate valves, a completely redesigned charge air cooling system, increased compression, as well as the newly implemented piezo injectors combine to attain engine improvements in all relevant areas: responsiveness, power, torque characteristic, efficiency and manoeuvrability. In addition to the 22 kW (30 PS) increase in power to 331 kW (450 PS) at 6,500/min, the engine offers 30 Nm higher torque, at 530 Nm between 2,300 rpm and 5,000 rpm.

The new six-cylinder engine features forced induction by an almost completely new intake system. Two mirrored turbochargers replace the previously used identical parts. In addition, the compressor and turbine wheels are now arranged in mirrored configuration in relation to the engine, and therefore rotate in opposite directions. The diameter of the turbine wheels has been increased by three millimetres to 48 millimetres, while the 55-millimetre compressor wheel is now four millimetres larger. Thanks to a newly developed lightweight cast manifold and the adapted turbine housings, it has been possible to improve the air flow conditions on the turbine inflow and outflow. This contributes to increasing efficiency, responsiveness, torque and power.

Control of the wastegate valves is also new. The valves are no longer adjusted by a vacuum, but electrically using stepper motors, making boost pressure control faster and more precise overall. The maximum boost pressure of the 911 Carrera S with GPF is around 1.2 bar.

Increased efficiency: charge air coolers now under the rear lid grille

Further downstream in the intake section, compressed air flows through the two newly positioned charge air coolers, which were previously installed in the location of the air filter – they have now swapped places. Instead of being located at the sides in the rear wings, the charge air coolers are now

located directly over the engine in a central position under the rear lid grille. This new position permits improved air inflow and outflow of the cooling air and the dethrottling of the process air path, while the increased size of the charge air coolers significantly boosts their efficacy.

The entire basic engine has been targeted for further development, and numerous details have been optimised. For the first time, piezo-controlled injectors directly inject fuel into the combustion chambers. Piezo injectors open and close even more rapidly than the previous solenoid-operated components, meaning that the injection volume can be divided across up to five injections per cycle. In addition, the injector opens outwards so that fuel is distributed better and in finer droplets into the combustion chamber. Without the new piezo injectors, the only way to implement these improvements would have been by increasing the injection pressure; the chosen method has made it possible to retain the pressure level of 200 bar.

Asymmetrical valve lift for better combustion

The VarioCam Plus variable valve control system uses asymmetrical intake camshafts with a small valve stroke to control gas exchange for the first time. In this arrangement, the two adjacent valves of a cylinder open in this partial load position at different partial strokes. Where previously both intake valves had a uniform 3.6-millimetre small valve stroke, on the new engine the lift is at 2.0 millimetres and 4.5 millimetres. This dethrottling in the partial load area and various other detail optimisations have improved fuel management and therefore combustion – reducing consumption and emissions. Smoother running at low engine speeds and loads also increases comfort on the road. When full stroke is selected for higher engine performance, both inlet valves of the cylinder open with parallel strokes.

Emotional sound both inside and out

The unmistakable sound of the 911 also contributes to the driving pleasure of this sports car. That's why the engineers have paid great attention to the sound balance of the intake and exhaust sides when carrying out further development. The exhaust systems have been revamped to offer a characteristic and appealing sound experience for the Porsche 911, in spite of stricter noise requirements and installation of the gasoline particulate filter. The twin-branch exhaust system now includes

map-controlled and fully variable exhaust flaps. This regulation capacity enables both optimum power development and an emotional sound profile. The flaps are electrically actuated by stepper motors. This also makes it possible to now set intermediate positions – for an even more emotional sound experience. A sports exhaust is also available. While the standard system has two double tailpipes, the sports exhaust system has two oval outlets.

Completely newly developed eight-speed dual-clutch transmission

The 911 Carrera S and 911 Carrera 4S are being launched exclusively with the first eight-speed dual-clutch transmission (PDK) for Porsche sports cars. Compared with the seven-speed transmission of the previous models, the new PDK offers a host of improvements. The driver can directly feel the enhanced combination of comfort, performance and efficiency. All gears have new ratios: first gear is now shorter and eighth gear longer than before. This has made it possible to implement a longer final-drive ratio, thereby further reducing engine speeds in the upper gears. The result is harmonious ratio stepping and further potential for reducing fuel consumption. Maximum speed can still be achieved in sixth gear. The use of a controlled oil pump and advanced fuel-efficient engine oils are further measures that reduce both power losses and fuel consumption. The oil pressure required for changing gear and clutch operation is controlled based on demand, and power losses in the transmission are reduced.

Fast gear changes for better dynamics

The new fast gearshift enables the driving dynamics of the 911 to be experienced even more intensely. This function is available for shifting up both in manual mode, and when Sport Plus is activated, also in automatic mode. As with the 911 GT sports cars, this means much shorter response times and faster gear changes. Fast gearshifts are generally used at high engine speeds and loads, and require significantly improved clutch switching during the gearshift operation. The hydraulically controlled clutch changeover takes place much faster thanks to an additional filling bypass.

Sport Chrono Package with a new mode switch

The Sport Chrono Package is the first choice when it comes to increasing driving performance and driving pleasure. The package includes the new mode switch with Sport Response button and PSM Sport Mode, dynamic engine mounts, as well as the stopwatch and the Porsche Track Precision app. Driving modes are selected by means of the new mode switch in the steering wheel, and the currently active mode is displayed in the instrument cluster.

The dynamic engine mounts – which have a new position better aligned to the engine's centre of gravity – combine the advantages of both hard and soft engine mounts. They increase both driving comfort and driving stability thanks to electronic control. The PSM Sport mode is separately switchable and adjusts the stability system to an especially sporty mode, in which ambitious drivers can get even closer to the limit range of their vehicle in a safe environment. Inspired by motor sports, the Sport Response button offers the option of setting engine and transmission responsiveness to maximum performance for 20 seconds. The Porsche Track Precision app enables measurement of lap times and driving data on race tracks; using a smartphone, this data can be recorded and managed, as well as shared and compared with other drivers.

In combination with the optional Sport Chrono Package, the new Wet Mode, which is standard for all 911 models, can be selected via the mode switch. The standard Sport function can then also be activated only by means of the mode switch.

The 911 Carrera 4S with more powerful front-wheel drive

The enhanced performance of the new 911 Carrera 4S goes hand-in-hand with the further development of the front-axle drive. The clutch and differential unit is now water-cooled and has reinforced clutch discs to increase robustness and load capacity. The increased actuating torques at the clutch improve its adjustment accuracy and as such also improve the function of the additional front-axle drive. In total, the refined front-axle transmission in combination with PTM (Porsche Traction Management) support even better traction on snow, as well as in both wet and dry conditions. In the area of driving dynamics, the precision, performance and load capability for race track use have been optimised.

Chassis and brakes

Motor racing technology: mixed tyre diameter and width for the first time

The chassis of the Porsche 911 sets standards for sports cars – and has done so in every generation for more than 50 years. With the chassis of the new 911, Porsche further exploits the driving dynamics potential. The basis for this is provided by the new mixed tyre configuration, with 20-inch wheels on the front axle and 21-inch wheels on the rear axle. At the same time, the tyres on the rear drive axle are significantly wider than on the front wheels. This results in a track that is 46 mm wider at the front of both models, as well as a 39 mm-wide track width at the rear of the 911 Carrera S. This combination enables the rear axle to build up higher lateral stability, and further improves the traction of the rear-wheel-driven 911. The mixed tyres also have a considerable influence on the vehicle balance. The handling is even more neutral and controllable. The vehicle has an extremely low understeer or oversteer tendency and therefore provides the driver with higher safety reserves, particularly with a dynamic driving style. The refined chassis design is completed by the next generation of Porsche Active Suspension Management (PASM), offering a significantly enhanced balance of sportiness and comfort. The PASM chassis is equipped with controlled shock absorbers as standard. It can be replaced with the PASM sports chassis, for a 10-millimetre-lowered body.

Sportier and more comfortable: further developed PASM with a wider spread

Porsche has extensively further developed PASM for the new 911. The latest generation of dampers features fully revised engineering. The main stage valve and the pressure chambers for the rebound and compression stage are controlled within a few milliseconds by means of a high-precision control valve that is infinitely adjustable using magnetic force. This enables precise adjustment of the damping force at any time. In addition, the Porsche chassis specialists have developed separate software controls for the new damper technology, which perfectly align the damper function to their application in the new 911.

The combination of new hardware and software results in significant advantages. When needed, the new PASM offers significantly softer damping than the previous system, and therefore greater comfort both in the compression and rebound stage. Quick, brief stimuli in particular – for example from cobblestones – are dampened with much greater success. At the same time, the new PASM offers the opportunity to have the dampers act more firmly, resulting in significant driving dynamics advantages with respect to roll stability, road connection, steering behaviour, and possible cornering speeds.

A PASM sports chassis lowered by ten millimetres is also available. The entire setup is designed specifically for enhanced driving dynamics and enables both greater agility on curves and more stability on high-speed stretches.

The Wet driving programme: the world's first wetness recognition – fitted as standard

The new 911 is the first in the world to feature an innovative system for recognising significant wetness on the road, including the Wet driving programme that can be manually selected at any time. This program has been specially developed to support the driver in wet conditions. The system uses acoustic sensors in the front wheel housings to recognise sprayed-up splash water, and in this way can detect wetness on the road. This makes it fundamentally different from windscreen wiper rain sensors, which only react optically to water droplets on the windscreen, independently of the road conditions. The response behaviour of the PSM and PTM systems is preconditioned if a road is recognised as wet. The system informs the driver of the detected wetness and recommends manually switching to Wet mode.

The corresponding function can either be activated in the new button bar above the centre console or is integrated in the mode switch with the optional Sport Chrono Package. If the driver activates this mode, the Porsche Stability Management (PSM), Porsche Traction Management (PTM), aerodynamics, optional Porsche Torque Vectoring (PTV) Plus, and drive responsiveness are adapted to the conditions in such a way as to guarantee the best possible driving stability. From 90km/h, the rear spoiler is adjusted to maximum downforce, the cooling air flaps open, the accelerator pedal characteristic is flatter, and PSM Off or Sport mode can no longer be activated. The Wet driving programme

is essentially based on a concept that the Porsche Advanced Development department had already developed to functional maturity in the middle of the 1990s, as part of the Prometheus European research programme.

New brake system setup with optimised brake response

The new wheel sizes with further-developed tyres led to a completely new chassis setup. This resulted in renewed improvements in wet grip and dry handling as well as in rolling resistance. The spring and anti-roll bar rates are higher and the brake system operates more precisely. Because the new rear wheels can transmit a higher braking force, the diameter of the rear brake discs has been increased from 330 millimetres to 350 millimetres. The brake pedal ratio has been shortened. The pedal is now made of an organic sheet composite material consisting of steel, carbon fibre and plastics. It weighs around 300 grams less than the previous steel component. There is a more immediate brake response, and the driver can also feel a very precise pressure point because of the firm connection. Sporty drivers in particular will value this optimised feedback. The brake system modifications are rounded off by the change from a pneumatic brake booster to an electric booster.

The race track-proven Porsche Ceramic Composite Brake (PCCB) is still optionally available for all 911 models. The ceramic brake offers low weight and practically no fading.

Direct steering ratio for greater agility

In order to further increase the agility and dynamic turn-in behaviour of the new 911, the steering ratio is around 11% more direct on the standard sports cars and approximately 6% more direct on vehicles with optional rear-axle steering. The 911 is even more agile as a result and provides even greater driving pleasure on winding roads. A new, typically Porsche steering controller is also used for improved feedback on the steering wheel. Thanks to the enhanced algorithm, the road conditions – dry, wet or snow – can be better taken into account to achieve the desired handling.

The comfort-oriented Power Steering Plus is optionally available. At low speeds, this steering operates with an adapted steering support, enabling particularly easy manoeuvring and parking.

Rear-axle steering plus lightweight battery

The rear axle steering improves both day-to-day usability and performance. The system has been further adapted for the new 911. Depending on driving speed, it directs the rear wheels to move up to two degrees either in the same direction as the steering angle on the front axle, or in the opposite direction. The result is that the 911 is even more agile when cornering, and its smaller turning circle makes it easier to manoeuvre in urban traffic. Higher speeds increase driving stability, when changing lanes for example. The rear-axle steering is also linked to use of a new lithium iron phosphate battery. This technology has its origins in motor sports. The service life of the lithium iron phosphate battery is 2.5 times that of a conventional lead-acid battery, but at 12.7 kilograms, it weighs less than half as much. The optional Porsche Dynamic Chassis Control (PDCC) is also available with rear-axle steering option. This system features active anti-roll bars and practically eliminates body roll when cornering.

Lift system for the front axle

The optional electro-hydraulic lift system allows the front axle to be raised by around 40 millimetres. Thanks to the increased approach angle and ground clearance, at the front axle, the system makes it easier to drive into garages and multi-storey car parks, for example.

Body and aerodynamics

More rigid body with even higher aluminium share

With the new 911, Porsche has further developed the mixed body construction throughout the vehicle and designed a completely new body structure. The steel share of 63 percent in the previous model has now been more than halved to 30 percent, for example. Apart from the front and rear aprons, the outer skin is now made fully of aluminium. The new door design, made from aluminium sheet, reduces the bodyshell weight without negatively impacting stability or quality.

In addition to high-strength steels, there is increased use of extruded aluminium profiles in the bodyshell, such as for the front and rear longitudinal members, inner and outer door sills and floor reinforcements. Their share has been increased from three to 25 percent. Porsche has also used more die-cast aluminium parts on the new 911. These components include the front spring strut mount, rear tunnel housing, rear carrier, and shock absorber mounts, for example.

The body components grouped directly around the passenger cell, as well as the A and B pillars and side roof frame, are made from ultra high-strength, hot-formed steels. These absorb the main loads to meet crash requirements and contribute to the intelligent lightweight construction: to achieve comparable strength using aluminium components would require additional bulk and more weight. For the first time worldwide, the new 911 Carrera Coupé also has a curtain airbag.

The enhanced body concept of the new 911 does not just ensure greater passive safety for the occupants, but also means the car bodyshell has higher rigidity. Compared with the previous model, the 911 Carrera 4S Coupé achieves torsion and bending values that are improved by 5%. As a result, the 911 stays unwaveringly on course even when driven sportily on road sections with different surfaces.

The optional roof systems are an exception to the full aluminium concept for the outer skin. Whereas the standard 911 Coupé has full light alloy panelling, the optional slide/tilt sunroof is made of steel. A glass roof with inner roller blind is also optionally available.

New engine mounts reduce vibrations

The redesigned supporting structures also permitted modification of the engine mounts with very noticeable benefits for driving dynamics. Previously, the engine was connected to a crossbar via two mounts located relatively far back. This crossbar was in turn bolted to the longitudinal members. On the new 911, the crossbar is completely omitted and the engine mounts are integrated directly in the longitudinal members, around 20 cm further forward. The front connection to the transmission mounts is unchanged. As a result of the new position and tuning of the engine mounts, there is a significant reduction in the engine oscillations transmitted to the vehicle chassis. This improves comfort when driving on poor roads at slow speeds as well as at higher speeds, for example when driving over bumps. At the same time, the driving dynamics benefits from the more rigid engine connection with the chassis. Fast, uneven corners can be taken even more sportily because the engine transmits fewer vibrations to the chassis with its weight. The directional stability of the 911 is therefore improved.

Adaptive aerodynamics with greater control range

The enhanced active aerodynamics of the new 911 again extends the vehicle's ability to combine energy efficiency and performance. To achieve this, the active element control strategy for the rear spoiler and cooling air flaps was modified depending on driving speed and driving mode. The new 911 now regulates its aerodynamics in the range between the efficiency-optimised Eco mode and the Performance configuration for optimum driving dynamics.

The new adaptive rear spoiler makes a significant contribution to aerodynamic optimisation: it is now significantly larger and wider. With its 45-percent larger aerodynamically effective area, it offers an improved balance between drag and reduced lift. The additional Eco intermediate position is completely new. This spoiler position creates the lowest aerodynamic resistance, thus minimizing fuel consumption. Fully extended to the Performance position, the rear spoiler completely compensates for the lift at the rear axle. Together with the minimum lift at the front axle, the new 911 therefore offers safe and stable handling even at very high speeds.

The rear spoiler of the new 911 is adjusted to three main positions depending on the driving situation and selected driving mode. The rear spoiler remains retracted up to a speed of 90 km/h. The rear spoiler moves to Eco position if the vehicle continues to accelerate. It remains in this position up to a speed of 150 km/h. Above this, the rear spoiler automatically travels to Performance position. In Sport, Sport Plus and Wet modes, the rear spoiler already extends to Performance position from a speed of 90 km/h. Top speed is always reached in the Performance position.

Spoiler supports charge air cooling

The Performance position can also be set when the vehicle is stationary and at low speeds, using a softkey in the PCM. An additional function of the rear spoiler is supporting charge air cooling. The rear spoiler is already extended from 60 km/h if the charge air temperature is high, in order to prevent loss in performance. As an additional functional enhancement, the compensation position extends the rear spoiler further when the sliding roof is open at speeds above 90 km/h.

The improved active aerodynamics components now also include continuously variable cooling air flaps in the front section. Previously these could be adjusted in three stages. The flaps open and close depending on temperature, load and speed, appropriate to the relevant situation. The two air intakes at the sides have been increased in size compared with the previous model. The flaps are completely closed in the speed range between 70 and 150 km/h if there are no parameters opposing this. This means that the 911 has the lowest air flow resistance, and fuel consumption is reduced. The flaps open from 150 km/h and are fully open at speeds above 170 km/h. This mode provides the best possible aerodynamic balance and optimum driving dynamics at high speeds. When the sliding roof is open, the flaps are already adjusted to this position from 120 km/h. The flaps are always open if the driver switches on Sport or Sport Plus mode.

Electrics and electronics

Intelligent LED headlights for better visibility

Porsche has developed a whole host of new safety and assistance systems for the new 911. The new optional LED matrix headlights with PDLs Plus catch the eye in particular. These represent the apex of Porsche lighting technology. The energy centre of the matrix headlights is made up of 84 individual LEDs which work together, with lenses positioned in front of them, and the high-power LED of the auxiliary high beam. The generated light beam corresponds in range and intensity to laser light. The light is distributed so that the driver always benefits from maximum illumination of the roadway without dazzling or disturbing other road users. The complex headlight module consists of several components that can be controlled very flexibly, and independently of each other, on the basis of camera data, navigation data and vehicle conditions.

Intelligent control of light distribution means that it has also been possible to integrate additional functions that significantly increase driving comfort and safety. The system is therefore able to detect and selectively dim highly reflective traffic signs. In addition to masking oncoming traffic on a segment-by-segment basis, the Boost function also increases illumination of the vehicle's own driving lane at the same time. This directs the driver's view in a targeted way, thereby increasing comfort and safety. The cornering light is switched on and off with smooth transitions and therefore reduces strain on the eyes.

The 911 is equipped with LED headlights from the factory as standard. These already include auxiliary high beam and dynamic range control. They form the basis for the optional headlights with PDLs Plus. The latter additionally include dynamic cornering light, high beam assist as well as motorway and fog light functions. The LED matrix headlights are a completely new development.

Assistance systems with additional options

The new 911 offers a combination of assistance systems as standard. These make driving in everyday traffic safer and more comfortable. The camera-assisted warning and brake assist system considerably reduces the risk of collision with vehicles, pedestrians and cyclists. As the first stage, the system

warns the driver visually and acoustically. There is then a braking jolt in the second stage if there is a higher level of danger. A braking operation initiated by the driver is reinforced up to full braking if necessary. If the driver does not react, automatic emergency braking activates to mitigate the consequences of a collision.

The optionally available adaptive cruise control system considerably extends the functional range. The package comprises automatic distance control with a stop-and-go function and reversible occupant protection. Using the radar sensor located in the middle of the central air intake and the camera, the system monitors the distance from vehicles driving in front and automatically adapts. Vehicles that cut in from adjacent lanes are also detected. If necessary, the system will brake to a standstill when following a vehicle in front. It will also use the coasting function when possible to reduce fuel consumption. In slow-moving traffic in particular, the system therefore offers increased driving comfort and safety.

Thanks to the stop-and-go function, the 911 is able to independently move off again after braking to a standstill. If the vehicle is stopped for longer than 15 seconds, it is sufficient to briefly press the accelerator or resume the function with the control stalk to let the vehicle move off again. The side windows and slide/tilt sunroof are automatically closed if an emergency braking situation occurs. The reversible belt tensioners for driver and front passenger are also activated.

Lane Keeping Assist with traffic sign recognition

Lane changes on roads with multiple lanes are among the most common risk situations. The optional Lane Keeping Assist is camera-based and reacts with steering assistance if the driver changes lane without indicating. The system ensures greater comfort and considerably improves safety on long-distance journeys in particular. In addition to steering assistance, an additional acoustic warning can be activated in the PCM. The system is active in the speed range between 65 and 250 km/h.

Lane Keeping Assist is combined with a traffic sign recognition function. This makes use of the same camera and detects permanent and temporary speed displays as well as "no overtaking" signs and indirect restrictions related to place name signs, for example. Operation of the traffic sign recognition function is situation-dependent and makes use of other vehicle systems. For example, it takes into

account wet conditions based on information from the rain sensor and displays weather-dependent speed limits. In order to offer greater safety when driving on unknown and twisting country roads, the system displays direction information on the instrument cluster display before sharp bends.

Lane Change Assist with visual warning

The further-developed Lane Change Assist function can be used in addition to Lane Keeping Assist. This system uses a radar sensor to detect the distance and speed of the following traffic in the adjacent lanes. If the system determines that the speed and distance of following vehicles are too critical for a lane change, a visual warning is displayed in the left or right exterior mirror. The system can detect vehicles in a distance range up to 70 metres and is active in a speed range between around 15 and 250 km/h.

New: Night Vision Assist with thermal imaging camera

Using an intelligent thermal imaging camera, Night Vision Assist detects persons and animals in darkness and shows them to the driver. The system has a range of up to 300 metres. The electronic system is able to classify the respective heat source and to distinguish between an animal and parked motorcycle with a warm engine, for example. Night Vision Assist is deactivated in built-up areas in order to prevent false warnings such as may be caused by dogs on a lead on the pavement, for instance. In combination with the optional LED matrix headlights, the detected persons or animals are also marked by brief flashing.

From ParkAssist to Surround View

Assistance systems make manoeuvring and parking with the new 911 much easier. The front and rear ParkAssist – now fitted as standard – supports the driver with visual and acoustic warnings. This function uses ultrasonic sensors located at the front and rear of the vehicle. ParkAssist can also be optionally supplemented with a reversing camera. This guides the driver by displaying a colour camera image on the PCM with dynamic guide lines and distances from potential obstacles. ParkAssist with optional Surround View additionally calculates a 360° top view from four individual cameras. The PCM display now includes significantly sharper resolution, almost twice as high as it has been in previous models.

New PCM with simplified operation

The new Porsche Communication Management (PCM) with online navigation makes it much easier to control the extended Infotainment functions. Numerous vehicle functions that were previously operated via the instrument cluster or centre console can now be configured in a graphically attractive way via the 10.9-inch touchscreen display of the PCM in the new 911. Map data for most European countries is pre-installed. Perspective map views and 3D navigation maps are available in many cases.

The system is intuitive to use and can be adapted to suit personal tastes. Using predefined tiles, drivers have a quick and easy way to create their own home screen including their preferred functions, such as favourite radio stations, sat nav destinations, telephone numbers, or the sports exhaust activation function. An information widget can be added to the right-hand side of the screen, enabling users to access other functions in the PCM. For instance, the interactive area in the middle of the screen can be used to display the sat-nav, while the right-hand side is used for the phone function.

It is possible to navigate through the menus with just a few finger taps and swipe movements. Just as on a smartphone or tablet, scrolling is performed by simple swiping with a finger tip. The new PCM is also capable of pinch-in and pinch-out operations or display rotation with two fingers. As an additional feature, the display can recognise handwriting: navigation destinations can simply be written on the screen. Many of the PCM functions can be conveniently used by means of the online-supported voice control function, fitted as standard.

Choice of three sound systems

In addition to the standard Sound Package Plus, sound systems from BOSE® and Burmester® are still offered for the new 911. With twelve speakers and a total output of 570 watts, the optional BOSE® Surround Sound-System offers an extremely balanced and true sound experience. The top system remains the Burmester® High-End Surround Sound System, also with twelve speakers and a total output of 855 watts.

Apps and services from Connect Plus

The new 911 features 100% connectivity. The many different options are part of Porsche Connect Plus, which comes as standard. Using the Porsche Communication Management (PCM) system, the driver can now access Amazon Music, Smart Home functions from the service provider Nest and Radio Plus, an intelligent combination of conventional reception and web radio. Thanks to the integrated LTE-capable SIM card, the new 911 is permanently online. This function is also included in the standard equipment. Also fitted as standard: the Porsche Connect app with simplified operator guidance for the central Connect functions.

Radio Plus is a further new feature. This service with integrated web radio function means that a favourite radio station has practically an unlimited range if the chosen station offers an online radio channel. If the sports car leaves the range for terrestrial reception via FM or digital radio, the system automatically switches to online streaming. The 911 features the improved "seamless" changeover function for the first time, so that it is practically impossible to hear the change in broadcasting source.

Online-navigation using swarm-based data

The online navigation function with real-time traffic information is now even simpler, faster and more comprehensive. The basis for the simple search for navigation destinations is the central "finder" – represented by a magnifying glass in the header bar of the PCM. This allows the user to search for destinations with simple terms. The finder also offers a host of additional information such as fuel prices, car parks with free spaces including prices and opening hours, or also user ratings for hotels and restaurants.

Voice input of navigation destinations is also just as simple thanks to the new Voice Pilot. The Porsche voice control function has been further developed once more. Thanks to online voice recognition, voice inputs are now much more intuitive than before. For example, it is possible to simply enter a navigation destination without address details.

Navigation calculation has also been optimised. This was made possible by simultaneous processing of on-board and online inputs. Route calculation for navigation therefore takes place at the same time both online and internally in the PCM. The PCM decides independently which navigation function has calculated the best route, but always starts with the result that has been calculated first.

The navigation system also processes so-called swarm data with the new Risk Radar service. This is anonymously recorded and transmitted data from correspondingly equipped vehicles on the traffic and road situation. On the basis of information from the vehicle sensors, this data provides warnings about fog, slippery roads and accidents, for example. In this way, the new 911 can help to minimise dangers and prevent accidents.

Navigation destinations can also be conveniently created not just in the PCM but also in advance of a journey, using the Porsche Connect app on a smartphone, or outside the vehicle on the "My Porsche" online platform.

One for all: Porsche Connect app for Apple and Android smartphones

The Porsche Connect app now provides the driver with even simpler and more comprehensive access to different vehicle and Connect functions by smartphone. The app is divided into three main areas: "Navigation"; "My Vehicle" for vehicle-specific functions; and "Me" for user-specific services and settings.

Porsche Track Precision app for sporty drivers

The Porsche Track Precision app allows 911 drivers to virtually save their experiences of driving enjoyment: The app permits detailed recording, display and analysis of driving data on a smartphone. Lap times can be automatically recorded via the PCM precise GPS signal, or manually by way of the steering wheel button in the optional Sport Chrono Package. Time measurement is even more precise with the lap trigger optionally available through Porsche Tequipment.

The user interface of the Porsche Track Precision app has been completely modernised for the new 911. Use of the app on a smartphone is now even more intuitive and user-friendly.