The new Cayenne E-Hybrid

Added e-performance for the Cayenne

Porsche is continuing to implement its performance-focused hybrid strategy in the new Cayenne: with electrical engine performance enhanced by over 43 per cent and around 30 per cent more battery capacity in comparison to its predecessor, the new Cayenne E-Hybrid offers the best driving dynamics in its class and maximum efficiency. A powerful three-litre V6 engine (250 kW/340 hp) combines with a virtually silent electric engine (100 kW/136 hp) to generate system power of 340 kW (462 hp). The maximum torque of 700 Nm is already available just above the idling speed. The boost strategy matches that of the 918 Spyder supercar, just like in the new hybrid Panamera models. The Cayenne's plug-in hybrid drive enables acceleration from 0 to 100 km/h in 5.0 seconds and a maximum speed of 253 km/h. The new Cayenne E-Hybrid can drive up to a distance of 44* kilometres and speed of 135 km/h on electricity alone, producing no local emissions. The average consumption of the all-wheeler in the New European Drive Cycle (NEDC), depending on the set of tyres used, is 3.4 – 3.2 l/100 km fuel and 20.9 – 20.6 kWh/100 km of electricity.

Alongside the launch of the Cayenne E-Hybrid, Porsche is expanding its range of comfort and assistance systems for the entire Cayenne series with additional innovative options. Accordingly, the list of available options now includes the new head-up display, the intelligent digital copilot Porsche InnoDrive including adaptive cruise control with active lane guidance, massage seats, the heated windscreen, independent heating with remote control and 22-inch light metal wheels. Remote Park Assist will be available in the next expansion phase. This package of new comfort and safety functions includes the ability to guide the Cayenne into a parking space or home garage using a smartphone.

462 hp system power with 918 Spyder boost concept

Porsche began pursuing electrification in its luxury SUV back in 2010: the Cayenne S Hybrid was the pioneer in its segment. In 2014, the Cayenne S E-Hybrid was another groundbreaker, with the introduction of plug-in hybrid technology. The next stage in the journey towards e-mobility is the new Cayenne E-Hybrid. While the performance of the combustion engine moderately improves on its predecessor by five kilowatts (7 hp), taking it to 250 kW (340 hp), the performance of the electric engine is now over 43 per cent higher, at 100 kW (136 hp). Both combine to produce a system power of 340 kW (462 hp), 34 kW (46 hp) higher than the car's predecessor. The battery capacity also reaches a new level, enhancing the electric range and boost reserves too: in comparison to the previous model, capacity has risen from 10.8 kWh to 14.1 kWh. This is an increase of around 30 per cent.

The boost strategy based on the 918 Spyder supercar is another new addition. It ensures that the electric engine can be used in all driving modes for an additional performance boost. A system torque of 700 Nm is directly available when you press the accelerator pedal. The spontaneous responsiveness creates an impressive acceleration experience that's unique to the segment. The Cayenne E-Hybrid hits 100 km/h in 5.0 seconds from a standing position. The SUV also reaches its maximum speed of 253 km/h with the combined forces of the combustion and electric engine in the Sport Chrono Package's Sport Plus mode, available as standard. Depending on the driving situation and performance requirements, drivers can continue to draw on the boost torque across the entire range of speeds. This leads to a significantly more agile and superior driving

experience.

The extent of the boost assistance and battery recharging depends on the driving mode. In the performance-focused Sport and Sport Plus modes, virtually all of the battery's energy can be used for a boost. In Sport mode, the battery is charged just as much as is required for a new boost. In Sport Plus mode, the battery is recharged as quickly as possible. In the other modes, a limited amount of energy is available for boosting in order to support efficient driving.

Driving modes for sporty and efficient driving

The new Cayenne E-Hybrid is now better suited than ever to driving requirements. Its control system also has a range of different driving modes at its disposal for this purpose. The emphasis is on performance, highlighted by the fact that the Sport Chrono Package is fitted as standard. The driver can toggle between the four modes E-Power, Hybrid Auto, Sport and Sport Plus using the mode switch on the steering wheel. Pressing the Sport Response Button in the middle of the mode switch ramps up the car’s responsiveness for 20 seconds, ensuring an even more enhanced performance – for spontaneous overtaking, for example. E-Hold and E-Charge modes are also available. These can be activated via the Porsche Communication Management (PCM). The central console can also be used to activate the Individual driving mode for a custom configuration defined by the drivers themselves.

Electric driving with a range of up to 44* kilometres

The Cayenne E-Hybrid always starts in E-Power mode. This prioritises the electric driving experience. Accordingly, the electric engine and entire high voltage system provide the maximum performance of 100 kW (136 hp) and 400 Nm. The driver can adjust the interplay between the electric and combustion engines using a pressure point in the accelerator pedal produced by the control system. Up until this pressure point, the SUV runs purely on electricity. When the driver deliberately surpasses the pressure point, the combustion engine kicks in and provides the system’s full drive potential.

In E-Power mode, the E-Launch function is available when the battery is charged sufficiently: if the brake is pressed when stationary and the accelerator is held at the pressure point at the same time, the Cayenne E-Hybrid starts when the brake is released with maximum, electric-only acceleration. To allow the driver to monitor this function, the electronic instrument cluster displays its activation. In the electric-only E-Power mode, the new Cayenne E-Hybrid reaches a maximum speed of 135 km/h and a range of up to 44* kilometres (NEDC): if the battery's charge status is below the minimum required for E-Power mode, the car automatically switches to Hybrid Auto mode.

Efficient driving in smart Hybrid Auto mode

The new smart Hybrid Auto mode enables the most efficient operation of the Cayenne E-Hybrid in city and intercity traffic. For the ideal combination of electric and combustion engines, the drive control calculates the optimum operating strategy based on driving profile, charge status, topology and speed information. Depending on these conditions, the system selects electric-only driving for situations where it makes most sense in terms of overall efficiency. When a destination is actively programmed into the navigation system, distance from the destination is also taken into account. Depending on the distance yet to be covered, the battery will charge efficiently at higher speeds by shifting the load point.

The driver decides: E-Hold and E-Charge

The driver can manually set the hybrid drive's operating mode using the PCM’s Hybrid menu. There, the E-Hold and E-Charge functions can be selected directly as an alternative to Hybrid Auto mode. While the Hybrid Auto mode strives for the most efficient electric driving to minimise consumption, E-Hold mode ensures that the battery's current charge status is deliberately maintained. This energy is then available at a later stage for electric driving or boosting. In the E-Charge mode, the battery is charged while driving using the combustion engine. By shifting the load point, the driver is able to increase the electric range in advance in order to use it in a specific way at a later stage, for example, in an urban environment.

Drives like a sports car: Sport and Sport Plus

The efficiency-focused E-Power and Hybrid Auto modes are only one side of the Cayenne E-Hybrid. The driver can experience the other side at the touch of a button in the performance-focused Sport and Sport Plus modes, thanks to the Sport Chrono Package available as standard. The Sport mode offers the classic features of a Porsche car for speedy journeys on roads and motorways. The drive and chassis switch to a sporty setting. The battery's charge status is kept to a minimum level required to provide sufficient boost potential for sports driving at any time. In Sport Plus, the focus is on maximum sports performance. The drive and chassis are in a performance setting. In the Cayenne E-Hybrid, the Sport Plus also differs from the Sport mode in that the battery charges faster. This enables more frequent boosting for longer. In both modes, the combustion engine remains in operation. In Sport Plus mode, the Cayenne E-Hybrid reaches its maximum speed of 253 km/h.

New hybrid model for high power density and spontaneous responsiveness

The Cayenne E-Hybrid is a parallel hybrid in which the electric and combustion engines both directly impact the drive train. A new, performance-focused V6 engine with 3.0 litre cylinder capacity and turbocharging acts as a combustion engine. This engine is combined with a new permanent-magnet synchronous motor. Based on the Porsche 918 Spyder, the electric engine has been converted from an internal rotor to an external rotor architecture. The idle, fluid-cooled stator is therefore encircled by the moving rotor. The advantages of the new engine: enhanced power density, improved effectiveness and good controllability for spontaneous responsiveness. The new hybrid module consists of a highly-integrated combination of electric engine and separating clutch. In contrast to the previous electro-hydraulic system with the spindle actuator, the separating clutch is operated electromechanically, which ensures even faster reaction times.

New battery with 30 per cent more capacity

The battery in the Cayenne E-Hybrid demonstrates the advances in storage technology: Despite storing around 30 per cent more energy, at 14.1 kWh, the battery is no heavier, at 138 kilograms. A specific charging strategy avoids deep discharge, guaranteeing a long lifespan. This means that the car can still be started electrically after it has been stationary for long periods.

The fluid-cooled battery is stored beneath the loading floor in the rear of the car and consists of eight cell modules with 13 prismatic lithium ion cells each. The cell anodes are optimised for high currents during boosting and recuperation. At the same time, the cell capacity was increased by an optimised cell structure and an improvement in cell

chemistry on the previous model, from 24 Ah to 37 Ah.

The plug-in charging system includes a new connection that's even easier to use. The charging key module shows the current status via an LED and allows the driver to switch between timed and immediate charging at the touch of a button. The timer can be programmed for time-shifted charging via the PCM or the Porsche Connect app. Charging times themselves vary depending on the on-board charger and electricity source. The fastest way for energy to pass through is with a high-voltage connection in combination with the optional 7.2 kW on-board charger. A 3.6 kW on-board charger is fitted as standard. The optional charging cable (mode 3) also allows the Cayenne E-Hybrid to be charged at public charging stations.

New eight-speed Tiptronic S and controlled Porsche Traction Management (PTM)

Porsche has redesigned the Cayenne E-Hybrid's drive train. The new Tiptronic S, developed for the entire Cayenne range with eight speeds, is responsible for transmission. The automatic gearbox not only offers even more comfortable and smoother starting but also significantly speeds up switching. Interruption of tractive force during the switching processes has also been further reduced.

The Cayenne E-Hybrid has an active hang-on all-wheel drive with an electronically regulated, map-controlled multiplate clutch. With its broad range of torque distribution, Porsche Traction Management (PTM) offers clear benefits in terms of driving dynamics, agility, traction control and offroad capabilities.

Chassis and brakes with all Cayenne options

With the brand new chassis, Cayenne E-Hybrid offers the same sports car driving dynamics as all other models of the new Cayenne generation. Porsche Active Suspension Management (PASM) is available as standard. For the first time, a hybrid model is also available with the Porsche Dynamic Chassis Control (PDCC) as an option, as well as the trailer fitting for loads up to 3.5 tons.

The Cayenne E-Hybrid is fitted with a grey cast iron brake system as standard. In keeping with Porsche's colour scheme, the brake calipers are acid green, but are also available in black. The new Porsche Surface Coated Brake (PSCB) is also available with brake calipers in acid green or an optional white. The Porsche Ceramic Composite Brake (PCCB), tried and tested on racetracks, is also available. The brake calipers are available in acid green or an optional yellow.

New hybrid-specific display and control design

The Cayenne E-Hybrid's display and control design has been completely reworked and is broadly similar to that of the 918 Spyder. The most remarkable feature is the standard Sport Chrono Package's mode switch, which allows different driving modes to be selected directly on the steering wheel. Even the hybrid-specific displays on the electronic instrument cluster were based on those of the 918 Spyder in terms of their functionality. The central Power Meter provides information on the energy currently being used or recovered, while the Boost Assistant gives details of the available electrical energy for boosting. The Hybrid assistant helps dispense electric drive power, helps visualise the point at which the combustion engine kicks in and also shows the remaining electric range calculated. The new PCM's 12.3-inch touch display offers additional information in the

Hybrid menu. This allows the driver to view the current energy flow, consumption values, remaining electric range and emissions-free driving sections.

Standard independent climate control: heating and cooling with pre-selection

The new Cayenne E-Hybrid combines classic Porsche performance with even more comfort. Independent climate control is now available as standard. The option of pre-conditioning is new. This allows the interior of the car to be heated or cooled before driving without starting the combustion engine. Both functions can be managed or programmed via the PCM or the Porsche Connect app. In winter, the windows can therefore be cleared of ice and snow before driving. Drivers and passengers can then climb into a car with comfortable interior temperatures. The same comfortable experience is offered by the cooling function, which can be used to precondition the SUV, for example, in summer, when the sun shines for long periods. Furthermore, the optional four-zone automated climate control system is now available for the first time for the Cayenne E-Hybrid. This allows the occupants of the car to individually adjust the temperature distribution to their own needs. Optional rear seat ventilation is also offered for the first time in the new Cayenne E-Hybrid.

Expanded functions: Porsche Connect and Porsche Charging Service

Porsche Connect offers the customer a range of options to help them connect more with their Porsche. It can be used, for example, to view car information remotely and to control selected functions via the app too. The Porsche Connect app displays the electric-only and the overall range, the battery’s current charge status and the remaining charging time. It can even be used to operate the independent climate control, i.e. the heating and cooling of the car when the ignition is switched off. Charging stations can be found, filtered and set as a navigation destination.

The new Porsche Charging Service also makes it easier to use public charging infrastructure (AC and DC charging stations) without having to register with the relevant provider too – even across states (not yet available in all states). This is billed directly via the Porsche ID account and a single unit price per state is guaranteed at all connected charging stations based on the charging power in question. The customer can view the desired charging station on the PCM or smartphone app and add it to the navigation. The service also offers real-time information on available charging stations, the required charging plug type and the charging power.

1. The spread of the maximum electric range depending on the set of tyres in use is between 42 km and 44 km.