



PORSCHE

2019 Cayenne E-Hybrid

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Highlights

Enhanced driving performance and increased electric range

- **New hybrid strategy.**

The new Cayenne E-Hybrid's performance-focused drive boasts significantly enhanced driving power and increased electric range.

- **Increased system power.**

The combination of a 3.0 liter V6 gasoline engine with 335 hp (250 kW) and a 134 hp (100 kW) electric motor produces a total system output of 455 hp (335 kW).

- **Inspired by the 918 Spyder.**

The electric motor provides both energy efficiency and additional thrust with a boost strategy based on the 918 Spyder super sports car.

- **Added e-power.**

The new Cayenne E-Hybrid highlights how important e-mobility is to Porsche, with a powerful electric motor and 30 percent more battery capacity.

- **No local emissions.**

With a range of up to 44* kilometers running on electricity alone (according to the NEDC), the Cayenne E-Hybrid can handle everyday distances without producing local emissions.

- **Improved transmission.**

The newly developed eight-speed Tiptronic S and the active hang-on all-wheel drive Porsche Traction Management (PTM) system enjoy equal distribution of force across all four wheels as standard.

- **Charging and connectivity.**

New hybrid-specific e-mobility services are available with the Connect Plus module as standard. Another feature available as standard is the Porsche Universal Charger (AC).

- **Full set of features as standard.**

The car is equipped with online navigation, the Sport Chrono Package, Porsche Active Suspension Management and independent climate control as standard.

- **New comfort systems.**

With the Cayenne E-Hybrid, Porsche expands its range of options to include new features such as head-up display, massaging seats and a heated windshield.

The new 2019 Cayenne E-Hybrid

Added e-performance for the Cayenne

Porsche is continuing to implement its performance-focused hybrid strategy in the new Cayenne with electric motor performance enhanced by over 43 percent in addition to roughly 30 percent more battery capacity in comparison to its predecessor. A powerful 3.0 liter V6 engine (335 hp/250 kW) combines with a virtually silent electric motor (134 hp/100 kW) to generate a total system output of 455 hp (335 kW). The maximum torque of 516 lb-ft is available just above idle. As in the new hybrid Panamera models, the boost strategy matches that of the 918 Spyder super sports car. The plug-in hybrid drive of the Cayenne enables acceleration from 0 to 60 mph in 4.7 seconds and a top track speed of 157 mph. The new Cayenne E-Hybrid can drive up to a distance of 44 kilometers (NEDC) and speed of 83 mph on electricity alone. EPA fuel consumption and electric range figures have not been announced at this time.

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, Porsche InnoDrive including adaptive cruise control with Active Lane Keep, massage seats, heated windshield, 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.

455 hp total system output with 918 Spyder boost concept

Porsche began pursuing electrification in its luxury SUV back in 2010 with the Cayenne S Hybrid - 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, taking it to 250 kW (335 hp), the electric motor – at 100 kW (134 hp) – now generates over 43 percent more power than the motor in the previous generation. Both combine to produce a system power of 335 kW (455 hp), which is an improvement as compared to the preceding model. The battery capacity also increases by about 30 percent to 14.1 kWh while keeping the same packaging size as compared to the previous model.

The boost strategy based on the 918 Spyder super sports car is another new addition. It ensures that the electric motor can be used in all driving modes for an additional performance boost. A system torque of 516 lb-ft is directly available when you press the accelerator pedal, allowing the Cayenne E-Hybrid to reach 60 mph in 4.7 seconds from a standstill. The SUV also reaches its top track speed of 157 mph with the combined forces of the combustion and electric motor 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.

Drive modes to suit many needs and environments

The new Cayenne E-Hybrid has a range of different driving modes at its disposal. Performance is the primary focus behind implementing a hybrid powertrain in the Cayenne model line, a fact highlighted by the standard Sport Chrono Package. Using the drive mode dial, the driver can toggle between the four modes: E-Power, Hybrid Auto, Sport and Sport Plus. Pressing the Sport Response Button in the middle of the mode switch temporarily adjusts all variable aspects of the

vehicle to their most performance-focused setting for 20 seconds. 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 driver.

Hybrid powertrain to enhance performance: Sport and Sport Plus Modes

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. This enables more frequent boosting for longer. In both modes, the combustion engine remains in operation. In Sport Plus mode, the Cayenne E-Hybrid is able to reach its maximum speed of 156 mph.

Electric driving with a range of up to 44* kilometers: E-Power Mode

The Cayenne E-Hybrid always starts in E-Power mode. This prioritizes the electric driving experience. Accordingly, the electric motor and entire high voltage system provide the maximum performance of 134 hp (100 kW) and 295 lb-ft. 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 access to 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 can reach a maximum speed of 83 mph and cover a range of up to 44* kilometers (NEDC). If the battery's charge status is below the minimum required for E-Power mode, the car automatically switches to Hybrid Auto mode.

Smart, efficient driving: 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 motor and combustion engine, the drive control calculates the optimum operating strategy based on driving profile, charge status, topography 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 may be selected directly as an alternative to Hybrid Auto mode. While the Hybrid Auto mode strives for the most efficient electric driving to minimize 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. 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. In the E-Charge mode, the battery is charged while driving using the combustion engine.

New hybrid model for high power density and spontaneous responsiveness

The Cayenne E-Hybrid is a parallel hybrid, meaning the electric motor and combustion engine both directly propel the vehicle. A new mono-turbo 3.0-liter V6 works with a permanent-magnet synchronous motor. Based on the Porsche 918 Spyder, the electric motor 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 new hybrid module consists of a highly-integrated combination of an electric motor and a separating clutch that operates more quickly than the design of the previous generation.

New battery with 30 percent more capacity

The battery at work in the Cayenne E-Hybrid stores about 30 percent more energy than the battery in the previous Cayenne S E-Hybrid model. Despite that, it is the same size and weight. The fluid-cooled battery is stored beneath the loading floor in the rear of the car and consists of eight modules with 13 prismatic lithium ion cells each. The cell anodes are optimized for high currents during boosting and recuperation. At the same time, the cell capacity was increased by an optimized 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 is 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. 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.

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.

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

The new eight-speed Tiptronic S transmission, developed for the entire Cayenne range offers improvements in shift speed and smoothness. Interruption of tractive force during the shifting processes is also reduced compared to the previous generation Cayenne.

The Cayenne E-Hybrid has an active hang-on all-wheel drive system 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 off-road capabilities.

Chassis and brakes with all Cayenne options

With a brand new chassis, the 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 Cayenne model is also available with the Porsche Dynamic Chassis Control (PDCC) as an option, as well as the trailer fitting for loads up to 7,716 lbs.

The Cayenne E-Hybrid is fitted with standard cast iron brake rotors. In keeping with the Porsche-typical brake caliper color 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. Porsche Ceramic Composite Brakes (PCCB) are also available with calipers in acid green or an optional yellow paint.

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 from a functionality perspective. The central Power Meter provides information on the energy currently being utilized or recovered, while the Boost Assistant gives details of the available electrical energy for boosting. The Hybrid assistant helps visualize the point at which the combustion engine kicks in and shows the remaining electric range calculated. The new PCM's 12.3-inch touch display shows current energy flow, consumption values, remaining electric range and emissions-free driving sections.

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

Independent climate control is now standard as compared to the previous generation where it was optionally available. This allows the interior of the car to be heated or cooled before driving without starting the engine. Similarly, it is possible to defrost the windows in cold weather ahead of time. Both functions can be managed or programmed via the PCM or the Porsche Connect app. Furthermore, the optional four-zone automatic 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.

New options for the Cayenne model range

Cayenne with new assistance systems, functions and feature details

Porsche is expanding its range of assistance systems and optional features for the entire series with a variety of innovations alongside the launch of the Cayenne E-Hybrid. A head-up display is available in a Porsche for the first time. It projects information into the driver's line of vision in a full-color display. Other features now available in the Cayenne are Porsche InnoDrive with adaptive cruise control and active lane guidance, massaging seats, a heated windshield, independent heating with remote operation and 22-inch wheels.

First Porsche head-up display

Porsche's first head-up display can be found in the new Cayenne. The system generates a graphic display that is split into seven sections. The height, brightness and angle of the display can be adjusted via the PCM. Depending on how the car is equipped, the driver can choose between up to four presets in which different driving information can be displayed based on preselection. The standard view provides information on activities and the status of the assistance systems. This allows recognized and currently applicable road signs to be displayed, for example, and navigation information to be presented when heading to a specific destination. In connection with the Sport Chrono Package, the relevant preset provides dynamic driving information such as speed, lap time and lap number. When the Sport Response function is activated, the driver can see the remaining function time in the head-up display. The Off-road preset, in conjunction with the optional Off-road package (not available for Cayenne E-Hybrid), provides the driver with information on side tilting, steering movement, incline and Hill Descent Control. The fourth preset in the user-defined display allows the user to create their own individual configuration from the individual display features via the PCM. Contextually relevant information is displayed regardless of the selected display configuration. For example, when the car is at risk of a collision, a large warning

symbol is displayed. Relevant symbols are shown for incoming calls or when voice commands are activated.

Exclusive to the Cayenne: the Offroad Precision app

With the new Offroad Precision app, Porsche gives the Cayenne driver the opportunity to document, evaluate and improve their off-road trips. The 'Trip' section works in a similar way to popular running apps for mobile phones. If recording is activated, all relevant data is collected automatically: driver, car, route, times and GPS data. These are used to automatically create route and elevation profiles that can later be viewed on a map. At the same time, the journey can be recorded in its entirety as a video, using either a smartphone or an externally controlled camera. The smartphone's 'sharing' function allows the trips to be shared on social networks. In the app mode 'Personal progress', the driver's individual performance is assessed with a bonus system. The Offroad Precision app is available for iOS and Android.

More comfort: independent heating, massage seats, load compartment management

The expanded range of features for the Cayenne now includes a heated windshield and a massage function for the optional 14-way front seats. Drivers and passengers can choose between five massage programs performed by ten pneumatic massage pads in the seat backs. The new load compartment management also includes two attachment rails integrated into the load compartment floor, a telescopic rod, lashing eyes and a luggage area partition net.

New wheels, Sport Exhaust and Sport Design Package

For sports-focused Cayenne drivers, Porsche is expanding its range of options to include new wheel designs – the 21-inch Cayenne Exclusive Design wheel and the 22-inch Cayenne Sport Classic wheel. The new 21-inch Cayenne E-Hybrid Design wheel is available exclusively for the Cayenne E-Hybrid.

The new sport exhaust system creates dynamics you can experience acoustically. It generates an especially powerful sound experience in the Sport and Sport Plus modes in particular. The high-gloss double sport exhaust pipes in the exhaust system are available in silver or black.

The Sport Design Package gives the new Cayenne models an even more sporty look. The stand-alone components in exterior color ensure an even more unique appearance.

InnoDrive: an electronic copilot

Porsche InnoDrive including adaptive cruise control, is exceptionally future-forward: the optimum acceleration and deceleration values are calculated for the next 1.8 miles using navigation data and activated via the engine, the Tiptronic S and the brake system. As part of this process, the electronic copilot takes into account curves, inclines and speed limits automatically. Current traffic conditions can be captured by a radar and video sensor and arrangements are adapted accordingly.

The system even recognizes roundabouts and adapts the speed to existing conditions. When Sport mode is activated, InnoDrive also switches into a more dynamic approach. The integrated adaptive cruise control helps the radar and video sensor record the distance from the cars in front and adapts it on an ongoing basis. Active lane keeping permits assisted driving on well-developed roads and motor ways (in a speed range of zero to 80 mph). The system drives the car with light steering interventions and follows the line of cars ahead within system limits. It bases its approach on road markings and other cars on the road.

Function package: Remote Park Assist for independent parking

With the new Remote Park Assist, Porsche has put together a comprehensive optional package of comfort and convenience functions which will be available for the new Cayenne generation in the next expansion phase. The driver cannot only leave parking to the SUV, but also gets help in maneuvering the vehicle and is warned of hazard situations when disembarking and leaving the parking space.

Active parking assistance makes parking much easier. Using ultrasound and camera systems, the system automatically recognizes parking spaces and measures their size. Once the system has signaled that the space is big enough, the driver can press and hold the button on the central console to begin and control the parking process. The system takes over the steering and chooses the speed itself and controls the accelerator and brake automatically. All the driver needs to do is monitor the process. The active parking assistance is able to park the car in horizontal and diagonal parking spaces.

Park Pilot goes a step further, allowing the driver to bring the car in and out of parking spaces via remote control using a smartphone. Once the system has identified a suitable parking space, the driver can initiate parking by pressing the relevant PCM button before disembarking. The parking process is then continued by continuing to press the button on the smartphone app. The garage pilot works according to the same principle and is used when the car is being parked or brought out of a narrow garage without requiring the driver to stay inside the car. Once the Cayenne reaches its endpoint, the engine and ignition are automatically switched off and the car is locked. The garage pilot can also bring the car out of parking spaces. To make this happen, the driver starts the SUV with the smartphone app and lets it emerge for long enough until he can climb in comfortably.

3D Surround View display creates a comprehensive overview

The system also helps drivers maneuver by themselves. Remote Park Assist's 3D Surround View display calculates a 360° view using four individual cameras to help with entering and leaving parking spaces and maneuvering the car. One of the system's major innovations is the perspective-based, three-dimensional display. The maneuvering assistant with its curb alert helps prevent collisions in narrow maneuvering situations where visibility is poor. The function is triggered automatically at speeds up to 6 mph and displays the parking situation in 3D on the PCM's touch display. If there is a risk of a collision, there is a warning display on the PCM and, where necessary, a steering boost.

Trailer maneuver assistance steers car itself when towing

If the Cayenne is being used for towing, the trailer maneuver assistance makes reverse parking much easier. Once the function is activated, all the driver needs to do is simply put the vehicle in reverse and accelerate gently. They can use the PCM's rotary adjuster to continually adjust the angle they would like to place the car in themselves. The image from the reverse camera on the PCM provides appropriate guide lines for orientation. The system activates the steering wheel itself and steers the trailer on the course selected by the driver.

Warning functions when disembarking and exiting a parking space

There are also two warning functions meant to enhance leaving a parking space. The first warns vehicle occupants against opening a door when a car is approaching from the rear. In that case, LEDs in the interior door handles flash red. This warning system remains active for three minutes after the ignition switch is turned off. The second function warns the driver if other cars are approaching while pulling out of a parking space where the view of approaching traffic may be obstructed. The warning system includes a visual alert on the PCM display, an audible warning and, where necessary, brake pulsations.