MERCEDES-EQ

Press Information
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The EQE: the new business avant-garde

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Further information on the official electrical consumption of new passenger cars can be found in the "Leitfaden über den Kraftstoffverbrauch, die CO_2-Emissionen und den Stromverbrauch neuer Personenkraftwagen" [Guide on the fuel economy, CO_2 emissions and electrical consumption of all new passenger car models], which is available free of charge at all sales outlets and from Deutsche Automobil Treuhand GmbH at www.dat.de..

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Descriptions and data in this press kit apply to the Mercedes-EQ European model range.
Details may vary from country to country.

The essential information and innovations

The new EQE[1]: the main points at a glance

The executive sedan EQE is the second model to be based on the premium-class electric architecture (EVA2), following the luxury EQS sedan. The EQE will celebrate its world premiere at the IAA show (September/Munich). The staggered global launch will begin mid-2022. Production will be in Bremen for the world market and in Beijing for the Chinese market.

Business avant-garde with progressive luxury

The EQE features a sporty 'purpose design' with all the characteristic elements of Mercedes-EQ, one-bow lines and cab-forward design. The overall design theme of Sensual Purity is reflected in generously modeled surfaces, reduced joints and seamless transitions. The overhangs and the front end are kept short, the rear provides the dynamic accent with a sharp rear spoiler. Flush with the outer edge of the body, the 19- to 21-inch wheels, together with a pronounced muscular shoulder section, give the EQE an athletic character.

Plenty of space for passengers

The EQE is more compact than the EQS and has a wheelbase that is 3.5 inches shorter, at 122.9 inches overall. In terms of external dimensions, it is comparable to the CLS. Like the latter, it has no tailgate but a fixed rear window and a trunk lid. The interior dimensions clearly exceed those of today's E-Class (213 model series), i.e. the shoulder room in the front (+ 1 in) or the interior length (+ 3 in). The seating position is also higher (+ 2.5 in). The interior design and equipment are clearly based on the EQS, with the MBUX Hyperscreen, automatic comfort doors (front) and rear-axle steering, for example, available as optional extras. In terms of noise and vibration comfort (NVH), the EQE is among the best in class.

Range of up to 660 kilometers[1]

The battery has a usable energy content of 90 kWh, and the range of up to 660 km[1] according to WLTP is absolutely suitable for longer drives. The model range will include two variants at market launch: the EQE 350 with 288 hp, as well as a second model that will be announced at a later date. Further versions will follow.

Always up to date

Like the EQS, the EQE offers the possibility to activate completely new vehicle functions via over-the-air updates (OTA) in many areas. Available from launch: the additional sound experience "Roaring Pulse", two special driving modes for young drivers and valet personnel, mini-games, the Highlight mode and DIGITAL LIGHT with projection function and DIGITAL LIGHT individualization. In Highlight mode the vehicle presents an overview of itself and its equipment highlights - this is activated by the "Hey Mercedes" voice assistant. In addition to the light animation "Digital Rain", DIGITAL LIGHT individualization includes other coming-home/leaving animations such as "Brand World". This means that after purchase and the original new car configuration, some of the EQE's equipment can be adapted according to personal preferences.

Navigation with Electric Intelligence

Navigation with Electric Intelligence plans the fastest and most convenient route, including charging stops, based on numerous factors and reacts dynamically to traffic jams or a change in driving style, for example. This includes a visual overview in the MBUX (Mercedes-Benz User Experience) infotainment system as to whether the available battery capacity is sufficient to return to the starting point without charging. Charging stations along the route that have been favorited by the driver are given preference in the route calculation.

1 Data on power consumption and range are provisional and were determined internally in accordance with the "WLTP test procedure" certification method. Confirmed TÜV figures, EC type approval and certificate of conformity with official figures are not yet available. Differences between the stated figures and the official figures are possible.

Proposed charging stations can be excluded. The estimated charging costs per charging stop are also calculated for the driver.

Clean air in the interior

With ENERGIZING AIR CONTROL Plus, Mercedes-Benz takes a holistic approach in regards to air quality in the EQE. The system is based on filtration, sensors, a display concept and air conditioning. The HEPA (High Efficiency Particulate Air) filter has a very high filtration level to trap fine particles, micro-particles, pollen and other substances entering with the outside air. The activated charcoal coating reduces sulphur dioxide, nitrogen oxides and odors in the interior. The interior air filter of this optional feature received "OFI CERT" ZG 250-1 certification in 2021 from the Austrian Research and Testing Institute (OFI) with respect to viruses and bacteria. Using pre-entry climate control, it is also possible to clean the interior air before getting into the vehicle. The fine-particle values outside and inside the vehicle are also displayed in the climate line. If the quality of the outside air is low, the system can also recommend closing the side windows or sunroof, as well as automatically switching to recirculation mode.

Green electricity as standard with Mercedes me Charge

By means of high-quality certificates of origin, Mercedes-Benz guarantees that energy from renewable energy sources is fed into the grid for charging current sourced via Mercedes me Charge. With Mercedes me Charge, customers are able to charge at over 530,000 public charging stations around the world, including nearly 60,000 public places to charge in the USA. With the new Mercedes me Charge Plug & Charge function, the EQE can be charged even more conveniently at Plug & Charge-enabled public charging points: inserting the charging cable automatically starts the charging process. No further authentication by the customer is required.

MBUX Hyperscreen on request

The MBUX Hyperscreen is the absolute highlight in the interior (optional extra). This large, curved screen unit sweeps almost from A-pillar to A-pillar. Three screens sit under a glass cover and appear to merge into one. The 12.3-inch OLED display for the front passenger gives them their own display and control area.

MBUX maintains its lead

With adaptive software, MBUX adapts completely to its user and makes personalized suggestions for numerous infotainment, comfort and vehicle functions. With the new zero layer concept, the most important applications are always offered on the top level within the field of vision, according to situation and context.

Emotive display concept

The EQE follows the EQS visually and in terms of interior displays. The dominant blue color scheme with a highlight in orange is immediately recognizable as "electric world". The Understated mode provides an emotive experience with minimalistic central display. And the optional three display surfaces can be transformed into a common color world in combination with the ambient lighting, the content while in this mode is reduced.

Driving assistance systems support in many driving situations

The latest generation of driving assistance systems includes numerous functions to support the driver. One new function is the microsleep warning from ATTENTION ASSIST (in conjunction with MBUX Hyperscreen). It analyzes the driver's eyelid movements using a camera in the driver display. The assistance display within the driver's display shows the operation of the driving assistance systems in a comprehensible full-screen view.

Interesting facts & figures

The new EQE: at a glance

Depending on the onboard equipment and configuration, WLTP operating ranges of up to 660 kilometers[1] are possible.

The torque delivered to the wheels by the eATS (electric drivetrain) is checked 10,000 times per minute and adjusted if necessary. This enables a much quicker response in the later versions with 4MATIC than with mechanical all-wheel drive.

The EQE is available with rear-axle steering as an option. Two versions are optionally available with a steering angle of up to 4.5° and up to 10°. The turning circle is reduced from 41 to up to 35 feet with 10° rear-axle steering.

The electric motor on the rear axle has 2 windings with 3 phases each. This 6-phase design makes this permanently excited synchronous motor (PSM) particularly powerful.

DIGITAL LIGHT (optional extra) has a light module in each headlamp with three extremely bright LEDs whose light is refracted and directed with the help of 1.3 million micro mirrors. The resolution is therefore more than 2.6 million pixels per vehicle.

Mercedes me Charge has one of the densest charging networks, with over 530,000 charging points in 31 countries, including nearly 60,000 public places to charge in the USA.

With the MBUX Hyperscreen (optional extra), multiple displays merge seamlessly to create an impressive curved screen band over 56 inches wide. The area perceived by the occupants measures 2.6 sq. ft.

The large glass covering the MBUX Hyperscreen is curved in three dimensions in a molding process at temperatures of approx. 1202°F. This process allows a distortion-free view of the display unit across the entire width of the vehicle, irrespective of the radius of the glass cover.

A lithium-ion battery with 10 cell modules is installed in the EQE. In the case of the battery, a major step has been achieved in terms of the sustainability of the cell chemistry: the optimized active material consists of nickel, cobalt and manganese in a ratio of 8:1:1.

The optional driving sound of the EQE is interactive and reacts to a dozen different parameters such as the position of the accelerator pedal, speed or recuperation.

No.6 MOOD bittersweet is the name of the fragrance composed especially for the EQE, based on a dark chocolate aroma. It bears the number 6 because the first electric cars were added to the model range in 1906 in the form of the "Mercédès Electrique" vehicles.

[1] Data on power consumption and range are provisional and were determined internally in accordance with the "WLTP test procedure" certification method. Confirmed TÜV figures, EC type approval and certificate of conformity with official figures are not yet available. Differences between the stated figures and the official figures are possible.

To get to the most important applications of MBUX, the user has to scroll through 0 menu levels. Hence the term zero layer.

The display area of the optionally available larger head-up display corresponds to a screen with a diagonal of 77 inches. The imaging unit consists of a high-resolution matrix of 1.3 million individual mirrors.

The HEPA (High Efficiency Particulate Air) filter as part of the optional ENERGIZING AIR CONTROL Plus, with a volume of 9.82 dm³, cleans the incoming outside air at its very high filtration level. Up to 99.75 percent of particles of all sizes are separated. Around 21 ounces of activated charcoal are used to neutralize odors. The adsorption area is equivalent to about 150 football fields.

For haptic feedback during operation, a total of 12 actuators are located under the touchscreen surfaces of the MBUX Hyperscreen. If a finger touches certain spots there, they trigger a tangible vibration in the cover plate.

The EQE is also one of the first vehicles to be built with steel from Salzgitter AG, which is 100 percent recycled. This reduces the CO_2 emissions in rolled steel production by more than 60 percent.

A coating on the glass cover simplifies cleaning of the MBUX Hyperscreen. The curved glass itself consists of particularly scratch-resistant aluminum silicate.

8 CPU cores, 24 GB RAM and 46.4 GB per second RAM memory bandwidth are included in the MBUX technical data.

A DC box with a charging capacity of up to 170 kW is fitted on board for (fast) charging via direct current. In 15 minutes it is possible to charge the EQE with up to 35.55 kWh – this corresponds to a range of up to 250 kilometers based on the WLTP range[2].

The brightness of the MBUX Hyperscreen's screen is adjusted to the ambient conditions using the measurement data from 1 multifunction camera and an additional 1 light sensor.

With up to seven profiles, the display area of the MBUX Hyperscreen for the front passenger can be individualized.

"Hey Mercedes" supports 27 languages with Natural Language Understanding (NLU).

For high noise and vibration comfort, the electric drivetrains (eATS) have a special foam mat all around as an NVH cover. The lid of the inverter has a sandwich construction of 3 metal and plastic layers.

[2] Data on power consumption and range are provisional and were determined internally in accordance with the "WLTP test procedure" certification method. Confirmed TÜV figures, EC type approval and certificate of conformity with official figures are not yet available. Differences between the stated figures and the official figures are possible.

Continuing the good genes of the EQS

The new EQE: the short version

Stuttgart. Just a few months after the introduction of the EQS, Mercedes-EQ is already presenting the next model based on the electric architecture developed specifically for electric vehicles, the new EQE. The sporty executive sedan offers all the essential functions of the EQS in a slightly more compact format. At market launch, the model range initially comprises two variants: the EQE 350 with 288 hp, as well as another model. Further versions will follow. Production of the EQE takes place at two locations of the Mercedes-Benz Cars global production network: at the German Mercedes-Benz plant in Bremen for the global market and at the German-Chinese joint venture BBAC in Beijing for the local market.

Compared to the luxury model EQS, the EQE is even more streamlined, with a slightly shorter wheelbase, shorter overhangs and more recessed flanks - it carries the concept of the executive sedan into the future. Sensual Purity is reflected in generously modeled surfaces, reduced joints and seamless transitions (seamless design). The overhangs and the front end are kept short, the rear provides the dynamic accent with a sharp rear spoiler. Flush with the outer edge of the body, the 19- to 21-inch wheels, together with a pronounced muscular shoulder section, give the EQE an athletic character.

In the outer dimensions (length/width/height: 196.6/77.2/59.5 inches), the EQE is comparable to the CLS. Like the latter, it has a fixed rear window and a trunk lid. The interior dimensions even clearly exceed those of today's E-Class (213 model series), i.e. the shoulder room in the front (plus 1 inches) or the interior length (plus 3 inches).

Unconventional interior design and high operating convenience

With the optionally available MBUX Hyperscreen, the entire instrument panel is a single, ultimate widescreen. This determines the aesthetics of the entire cockpit and interior. The high-resolution screens appear to merge seamlessly under the shared glass cover. The graphic appearance of their MBUX content is perfectly coordinated. The MBUX Hyperscreen is integrated into the instrument panel in minimalist fashion.

The vent band boasts a slim design that spans across the entire width at the top. These extreme proportions, together with the glass wave of the MBUX Hyperscreen, create the avant-garde architecture of the cockpit. The outer nozzles feature a turbine design. They play on the theme hyper analogue through the contrast between high-tech precision mechanics and digital, glass display world.

The latest MBUX generation, recently introduced in the EQS, is also on board the EQE. With adaptive software, the control and display concept completely adapts to its user and makes personalized suggestions for numerous infotainment, comfort and vehicle functions. With the zero-layer design, the user does not have to scroll through submenus or give voice commands. The most important applications are offered situationally and contextually on the top level in the field of view. In this way the EQE driver is relieved of certain operating steps.

Efficient drive system

The EQE 350 with 288 hp, plus a second model, will be launched first. Further versions will follow. All EQE models have an electric drivetrain (eATS) on the rear axle. The later versions with 4MATIC are also equipped with an eATS at the front axle. The electric motors are permanently excited synchronous motors (PSM). With the PSM, the rotor of the AC motor is fitted with permanent magnets and therefore does not need to be supplied with power. The advantages of this design include high power density, high efficiency and high power constancy. The motor on the rear axle is particularly powerful due to its six-phase design: it has two windings with three phases each.

In the EQE, the lithium-ion battery consists of ten modules and has a usable energy content of 90 kWh. The innovative battery management software, developed in-house, allows updates over the air (OTA). In this way, the energy management of the EQE remains up-to-date throughout the life cycle.

In the case of the battery, a major step has been achieved in terms of the sustainability of the cell chemistry: the optimized active material consists of nickel, cobalt and manganese in a ratio of 8:1:1. This reduces the cobalt content to less than ten percent. The continuous optimization of recyclability is part of Mercedes-Benz's holistic battery strategy.

Key technical data[1]

		EQE 350
Drive system layout		
Electric motor	Type	Permanently excited synchronous motor
Output	hp	288
torque with	Lb-ft	391
Rated voltage	Volts	328.5
AC charging time, three-phase (11/22 kW)	h	8.25/4.25
DC charging capacity, max.	kW	170
DC charging time at quick-charging station[2]	min	32
DC charging: max. range after 15 minutes[3] (WLTP)	km	250
Vehicle		
Length/width/height	in	196.6/77.2/59.5
Wheelbase	in	122.9
Turning circle (without/with rear-axle steering 4.5°/10°)	ft	41/38/35
Power consumption and range		
Power consumption (WLTP)	kWh/100 km	19.3-15.7

[1] Technical data of the EQE regarding consumption, range, power, torque, recuperation as well as performance in this publication are preliminary and have been determined internally in accordance with the applicable certification method. Figures for power consumption and operating range are provisional, and were measured internally in accordance with the certification method "WLTP test procedure". Confirmed TÜV figures, EC type approval and certificate of conformity with official figures are not yet available. Differences between the stated figures and the official figures are possible.
[2] The charging times are for a 10-80% charge at a DC fast charging station of category "K" or "L" pursuant to EN17186 with 500 A charging current
[3] At DC fast charging stations with 500 amps based on WLTP range

Consistently delivering high performance and multiple accelerations without a drop in power characterizes the EQE's drive philosophy. This includes a sophisticated thermal concept and several variants of energy recovery by means of recuperation. In this process, the high-voltage battery is charged by converting the mechanical rotary motion into electrical energy during overrun or braking mode. The driver can manually select the deceleration in three stages (D^+, D, D^-) as well as the gliding function via shift paddles behind the steering wheel. Also available: D^{Auto}.

ECO Assist also offers situation-optimized recuperation - deceleration is so strong or weak that it ultimately results in the most efficient driving style. If possible, recuperative deceleration is also used for vehicles detected ahead. This occurs until they come to a standstill, for example at traffic lights. The driver does not need to press the brake pedal for this – allowing for one-pedal driving.

Navigation with Electric Intelligence plans the fastest and most convenient route, including charging stops, based on numerous factors and reacts dynamically to traffic jams or a change in driving style, for example. This includes a visualization in the MBUX infotainment system as to whether the available battery capacity is sufficient to return to the starting point without charging.

High noise and vibration comfort, Sound Experiences as a contrast

As a sedan with a trunk lid, the EQE's concept is well equipped to offer a high level of NVH comfort (Noise, Vibration, Harshness) into account. Numerous measures contribute to this. In the electric drivetrains (eATS), the magnets are arranged inside the rotors in an NVH-optimized way (known as 'sheet metal cut'). In addition, the eATS have a special foam mat all around as an NVH cover. The inverter cover is a sandwich construction. The eATS are double-decoupled from the body via elastomeric bearings:

Highly effective spring/mass components provide continuous sound insulation from the crossmember under the windshield to the floor of the trunk. Acoustic foams are inserted into many carriers during body-in-white construction.

If desired, the ride in the EQE nevertheless becomes an acoustic experience: If the Burmester® surround sound system is on board, the EQE has the two soundscapes: Silver Waves and Vivid Flux. Silver Waves provides a rich and clean sound. Aimed at EV enthusiasts, Vivid Flux is crystalline, synthetic yet humanly warm. They can be selected or switched off as sound experiences on the central display. The additional soundscape Roaring Pulse can be activated as an over-the-air update. This sound experience is reminiscent of powerful machines, and is sonorous and extroverted.

Air suspension and rear-axle steering as options

The suspension of the new EQE, with four-link front suspension and multilink rear suspension, is closely related in design to the new S-Class. As an option, the EQE is available with AIRMATIC air suspension with ADS+ adaptive damping system. With rear-axle steering (optional extra), the EQE feels as maneuverable as a compact car in the city. The steering angle at the rear axle is up to ten degrees. The turning circle is reduced from 41 to 35 feet with rear-axle steering.

New vehicle functions can be activated via over-the-air technology (OTA). Available from launch: the additional sound experience "Roaring Pulse", two special driving modes for young drivers and service personnel, mini games, the highlight mode as well as DIGITAL LIGHT with projection function and DIGITAL LIGHT individualization. In Highlight mode the vehicle presents itself and its equipment highlights - this is activated by the "Hey Mercedes" voice assistant. In addition to the light animation "Digital Rain", DIGITAL LIGHT individualization includes other coming-home/leaving animations such as "Brand World". The OTA functions are available in the Mercedes me Store, and the range of features will be successively expanded.

Convenient charging in a large charging network

With the new Mercedes me Charge Plug & Charge function, the EQE can be charged even more conveniently at Plug & Charge-enabled public charging points: when the charging cable is plugged in, the charging process starts automatically; no further authentication by the customer is required. The vehicle and the charging station communicate directly via the charging cable.

Furthermore, Mercedes me Charge customers continue to benefit from the integrated payment function with automatic payment. The customer chooses the preferred payment method only once. Every charging process is then automatically debited – including charging abroad. The individual charging processes are clearly listed in a monthly invoice.

Mercedes me Charge is one of the largest charging networks worldwide: it currently has more than 530,000 AC and DC charging points in 31 countries, including nearly 60,000 public places to charge in the USA. By means of high-quality certificates of origin, Mercedes-Benz guarantees that energy from renewable energy sources is fed into the grid for charging current sourced via Mercedes me Charge.

High level of passive and active safety

The principles of Integral Safety, in particular accident safety, apply regardless of the platform. Like all other Mercedes-Benz models, the EQE therefore has a rigid passenger cell, special deformation zones and modern restraint systems with PRE-SAFE®.

The fact that the EQE is based on an all-electric architecture which opened up new design possibilities for its safety concept. It meant, for example, that a favorable location could be chosen for the installation of the battery, in a crash-protected area in the underbody. And because there is no large crankcase on board, the behavior in a frontal crash could be modeled even better. In addition to the standard crash tests, the car's performance in various additional load situations was verified and extensive component tests carried out at the Vehicle Safety Technology Centre (TFS).

The latest generation of driving assistance systems includes numerous features that further support the driver. One new function is the additional microsleep warning from ATTENTION ASSIST (in conjunction with MBUX Hyperscreen). It analyzes the driver's eyelid movements using a camera in the driver display. The assistance display within the driver's display shows the operation of the driving assistance systems in a comprehensible full-screen view.

Mercedes management on the EQE

"After the EQS, the EQE is already the second model on our platform for luxury- and premium-class electric vehicles. This speed of innovation shows the advantages of the scalable architecture: With the new EQE, we can quickly make the high-tech solutions of our electric flagship EQS available to a wider group of buyers. And our production flexibility reaches new heights with the EQE: at the Bremen plant, where the versions for the world market roll off the production line, four other models are already in production."
Markus Schäfer, Member of the Board of Management of Daimler AG and COO of Mercedes-Benz Cars

"2021 is an extremely important year in our electric initiative: with the EQA, EQS, EQB and now EQE, we have celebrated four world premieres of fully electric passenger cars at Mercedes-Benz Cars. With its dynamic driving experience and comprehensive range of Connected Services, the EQE is a perfect fit for the desires of a modern generation of customers. We reconcile innovation and emotionality with sustainability: with Green Charging, we are actively contributing to the reduction of CO_2 emissions. In addition, there are numerous intelligent functions that make everyday life easier for our customers. This includes Plug & Charge, for example - plug in and the EQE is charged without further authentication or registration."
Britta Seeger, Member of the Boards of Management of Daimler AG and Mercedes-Benz AG, responsible for Mercedes-Benz Cars Marketing and Sales

“The Mercedes EQE is the next all-purpose electric luxury sedan with the typical One-Bow-Signature Design creating fast lines and silhouette and through that a very aerodynamic and futuristic look. All of this makes the car more flamboyant and entertaining, more extraordinary and defines the next level of luxury for the Mercedes-EQ brand.”
Gorden Wagener, Chief Design Officer Daimler Group

Accelerated transformation from "Electric first" to "Electric only"

The new EQE: sustainability

Mercedes-Benz is setting the course for an all-electric future: by the end of the decade, the brand with the star will be ready to go fully electric - wherever market conditions permit. With this strategic step from "Electric first" to "Electric only", Mercedes-Benz is accelerating its transformation into an emission-free and software-driven future. In many areas, Mercedes is already thinking about tomorrow today: the new EQE is designed to be correspondingly sustainable. Resource-saving materials such as secondary steel are also used. Mercedes-Benz looks at the entire value chain, from development and the supplier network to its own production. Mercedes-Benz AG has had its climate protection targets confirmed by the Science Based Targets Initiative (SBTI). With these goals, the company supports the Paris Climate Accord.

Nine important building blocks of the transformation towards sustainable mobility.

1. Electrified product portfolio

By 2022, Mercedes-Benz will offer battery electric vehicles (BEVs) in all segments in which the brand is represented. From 2025, all new vehicle architectures will be exclusively electric, and customers will be able to choose a fully electric alternative to each model. The company is significantly accelerating investments in research and development. Between 2022 and 2030, a total of more than 40 billion euros have been earmarked for investments in battery-electric vehicles. The faster expansion of the range of impressive electric vehicles will lead to a faster breakthrough of electromobility. In 2025, Mercedes-Benz will introduce three all-electric architectures: MB.EA, AMG.EA and VAN.EA.

2. Transparent dialogue

Since 2005, Mercedes-Benz has been the first automotive company to subject its vehicles to the strict requirements of an environmental certificate in accordance with ISO guideline TR 14062. The TÜV-certified documentation is based on a comprehensive life-cycle assessment of the respective vehicle, in which every environmentally relevant detail is documented. The Group's sustainability report has provided detailed information on this topic every year since 2006. And the Daimler Sustainability Dialogue continues to bring together sustainability experts from various fields with Daimler representatives every year since 2008. Current and future sustainability issues are discussed in workshops, progress as well as deficits and risks are evaluated, and resulting needs for action are defined. In November 2020, the Daimler Sustainability Dialogue brought together over 200 representatives from business, science, politics, NGOs, associations, trade unions and local authorities in the digital space.

3. Carbon-neutral production

Mercedes-Benz is working to prepare its global production network for the manufacture of fully electric vehicles. Starting next year, eight Mercedes-Benz electric vehicles will roll off the production lines at seven locations on three continents. By 2022, all passenger car and battery assembly plants operated by Mercedes-Benz AG will be converted to climate-neutral production. This also includes EQE production at the Bremen plant. To achieve climate-neutral production, the first step is to consistently reduce and, where possible, completely avoid emissions that are generated in Mercedes-Benz vehicle production and in the energy supply of the plants. The company relies on three strategic pillars for doing so: continuous increase in energy efficiency, use of green power and realization of a sustainable heat supply. Starting in 2022, all owned production plants of Mercedes-Benz AG around the world will obtain electricity exclusively from renewable sources. In addition, concrete CO_2 measures are agreed with suppliers. Logistics are an essential part of this

supply network: at the beginning of 2020, rail transport in Mercedes-Benz transport logistics were converted to a carbon-free energy supply in cooperation with Deutsche Bahn.

4. Sustainable battery production

Local battery production is a major success factor in the strategic electric initiative of Mercedes-Benz AG – and a crucial element when it comes to being able to flexibly and efficiently serve the global demand for electric vehicles. Production plays a decisive role in Mercedes-Benz AG's understanding of sustainability. For example, the Mercedes-Benz Hedelfingen plant will ensure carbon-neutral production of battery systems as of 2022. In addition, Mercedes-Benz has agreed to purchase CO_2-neutrally manufactured battery cells as part of strategic partnerships, starting with the EQS and followed by the EQE.

5. Decarbonization of the supplier network

The EQE is one of the first vehicles with bodyshell components of 100 percent recycled steel from Salzgitter AG. This already reduces CO_2 emissions for the semi-finished product by more than 60 percent. In general, the supplier network provides a considerable part of the value creation and is thus of crucial importance for the decarbonization goals. The majority of the suppliers accounting for around 90 percent of the annual procurement volume have already signed an Ambition Letter confirming their agreement to supply only parts from CO_2-neutral production in the future. From 2039 at the latest, only production materials which have been produced on a carbon-neutral basis in all value creation stages will be allowed through the plant gates of Mercedes-Benz. A supplier declining to sign the Ambition Letter will not be eligible for new supply contracts.

6. Raw materials from certified mining

Mercedes-Benz looks at the entire value chain, from development and the supplier network to its own production. Responsibly mined and processed raw materials provide the foundation for a sustainable Mercedes-Benz electric vehicle fleet. Mercedes-Benz has therefore had the complex supply chains of battery cell suppliers audited in accordance with OECD standards and will in future only purchase battery cells with cobalt and lithium from certified mining. In addition, Mercedes-Benz is making the "Standard for Responsible Mining" in the "Initiative for Responsible Mining Assurance" (IRMA) a key criterion for supplier decisions and contracts in raw material supply chains and will only work with suppliers who agree to these requirements.

7. Resource-conserving materials

EQE components with a total weight of more than 165 lbs are made partly from resource-saving materials (recyclates and renewable raw materials). These include cable ducts made from recycled plastics, for example.

8. Green power for on the move

With Mercedes me Charge, customers always charge green at every public charging station in the United States. It is ensured that for charged energy quantities corresponding amounts of green electricity are fed into the grid after the actual charging process and, in addition, incentives are created to invest in renewable energy plants. There is no basic fee for Mercedes me Charge for the first two years after the purchase of an EQE.

9. Sustainable battery use

Mercedes-Benz takes a holistic approach to the battery life cycle: Re-Use, Remanufacture, Recycle. Once the traction batteries of the Mercedes-EQ fleet reach the end of their life on the road, it's far from over. Mercedes-Benz Energy, based in Kamenz, is a subsidiary of Mercedes-Benz AG responsible for the development of innovative energy storage solutions. By building stationary energy storage systems, electric

car batteries can be connected to the grid. The spectrum for large-scale storage applications from Mercedes-Benz Energy ranges from peak load balancing and black start (power plant start-up independent of the power grid) to uninterruptible power supply (UPS). The company's focus is in particular on applications from the 2nd-life and replacement parts storage unit sector. Only then is it time for material recycling.

Avant-garde business sedan

The new EQE: the exterior design

The EQE features a sporty 'purpose design' with all the characteristic elements of Mercedes-EQ, one-bow lines and cab-forward design. Sensual Purity is reflected in generously modeled surfaces, reduced joints and seamless transitions (seamless design). The overhangs and the front end are kept short, the rear provides the dynamic accent with a sharp rear spoiler. Flush with the outer edge of the body, the 19- to 21-inch wheels, together with a pronounced muscular shoulder section, give the EQE an athletic character.

Compared to the luxury liner EQS, the EQE is even more streamlined, with a slightly shorter wheelbase, shorter overhangs and more recessed flanks - it carries the concept of the executive sedan into the future.

The sporty, low and slim front of the EQE forms a coupe-like silhouette with a bow (one bow) stretched tightly over the greenhouse. The A-pillar, which has been moved far forward, and the C-pillar at the rear create space for a generous passenger compartment. Unique in this segment is the cab-forward design: The overhangs and the front-end assembly are short, the rear forms a dynamic accent with a sharp rear spoiler. Flush with the outer edge of the body, the 19- to 21-inch wheels, together with a muscular shoulder section, give the EQE an athletic character.

The design philosophy of Sensual Purity is implemented with the clear, flowing design. Tense, sinewy surfaces emphasize the athleticism, and the claim of seamless design is confidently realized with reduced lines and flowing transitions. Aerodynamics and formal aesthetics are synergistically coordinated. The detailed design expresses innovation and exclusivity.

Black Panel front with Mercedes-Benz pattern on request

The front is combined into a 'Black Panel' unit. Innovative headlights and the deep black radiator grille (Black Panel) form the athletic face and simultaneously position the EQE as a member of the new Mercedes-EQ vehicle family. In addition to its unique look, there is also function behind the Black Panel surface: the various sensors of the driving assistance systems such as ultrasound, camera and radar are integrated. The concise daytime running light signet interprets the brand's characteristic flare. LED High Performance headlamps are standard, DIGITAL LIGHT is available as an optional extra.

The exclusive look of the Black Panel radiator grille with the central Mercedes star can be enhanced still further: in conjunction with AMG Line exterior, includes the Mercedes-Benz pattern, a three-dimensional star pattern. This references the original star of the Daimler-Motorengesellschaft company, which was registered as a trademark in 1911. The seamless design is reflected in the front-end design in particular. Examples include the reduced gap dimensions and overlapping hood. The latter does away with the traditional divide between hood and fenders.

Striking one-bow lines

The aerodynamic silhouette with frameless, coupe-like doors and the high, arched beltline are independent design elements in the profile. The outside mirrors sit on the beltline and are aerodynamically and aero-acoustically optimized. Chrome accents highlight design focal points like the one-bow lines of the window graphics. High-quality painted contrasting surfaces can be found in the lower area of the vehicle. Stone chip protection has been integrated into the chrome trim.

The service flap for wiper fluid was integrated into the side of the left wing.

Light band with LED lamps in 3D helix design

The sporty, coupe-like rear carries a rear spoiler with a sharp spoiler lip. The large rear window, which extends downwards from the roof in a flowing contour, is a distinctive feature. For the first time, the components of the various aerials are hidden underneath, invisible from the outside. The trunk lid joins the windshield with a slight gradation and unobtrusively incorporates the additional brake light. The rear camera is hidden behind the star, protected from dirt. Another highlight at the rear are the innovatively designed LED lights: their insides have the shape of a curved and illuminated 3D helix. The EQE has a continuous light band at the rear - a distinguishing feature of Mercedes-EQ vehicles.

In the slipstream of the world champion

The new EQE: aerodynamics

For more than three decades, the aerodynamicists at Mercedes-Benz have been achieving top results. At present the EQS (V 297)[1] with a C_d figure of 0.20, the A-Class Sedan (V 177) and the S-Class (V 223) with 0.22 are the world record-holders. The special simulation tools and the Mercedes-Benz aero-acoustics wind tunnel commissioned in 2013 make a decisive contribution to this. The EQE also received its fine-tuning there. It achieves a very good C_d figure thanks to its one-bow design and extensive aerodynamic measures.

After the EQS, it is the second Mercedes EQ to stand on the modular architecture for luxury- and premium-class electric vehicles. The electric sedan therefore shares many aerodynamic measures with its big brother - and is thus in the slipstream of the aerodynamics world champion. The Purpose design with a smooth underbody and mostly closed radiator shutter were a good starting point for flow optimization, although the EQE with shorter front and rear overhangs and standard steel suspension is at a slight conceptual disadvantage.

Mercedes also offers 19 and 20-inch aero-wheels which have been optimized in the wind-tunnel. Among them is a two-tone light-alloy wheel with an almost fully closed surface but visible high-sheen rim flange.

Behind the very good aerodynamic performance is a lot of detail work. The non-visible details in particular, for example on the underbody, were developed particularly intensively. Several thousand computational runs were performed in the virtual wind tunnel alone. Below are some details of the aero development:

- Aerodynamically favorable dimensional concept and tires with optimized geometry
- Aerodynamically optimized wheels
- Cooling air control system with innovative transverse louver makes extremely efficient use of the available installation space
- Continuous seals in the front area, i.e. between service flap, Black Panel and headlamps
- Streamlined design of the A-pillar
- Wheel spoilers at front and rear
- Elaborately harmonized underbody paneling in the rear axle area to take even greater advantage of the smooth underbody of the battery
- Distinctive spoiler lip on the trunk lid.

Extensive sealing and insulation measures reduce wind noise

In an electric car without the usual level of powertrain noise, wind noise is particularly noticeable by the occupants. That's why the aeroacoustics behavior is particularly important. In this area too, the new EQE is one of the very best vehicles in its class.

Lots of fine-tuning in the details: in order to reduce or prevent low-frequency noises that can be perceived as reducing comfort, numerous cavities in the car body were filled with acoustically effective foam, for example.

It was also possible to reduce the high-frequency components of the wind noise in the EQE through improved seals on the door handles, the window supports and the outside mirrors. The aero acousticians paid special attention to the seals of the transitions between the six side windows. This concept is new to Mercedes-Benz

[1] EQS 450+ (combined NEDC power consumption: 18.9-16.2 kWh/100 km; CO_2 emissions: 0 g/km) with 19-inch AMG wheel/tyre combination and AMG Line exterior (available in the EU from the end of 2021) in the SPORT drive program. The power consumption (and information based thereon) has been determined on the basis of Commission Regulation (EC) 692/2008 according to NEDC and Commission Regulation (EU) 2017/1151 according to WLTP

vehicles and was first used in the EQS. Another contribution is made by the A-pillar with a specially shaped trim element at the transition to the windshield. In its development, both modern flow simulations and external noise measurements by means of a special microphone array in the wind tunnel were used. The A-pillar designed in this way not only improves the aeroacoustics, but is also important for a low c_d figure and in keeping the windows free of dirt.

The Acoustic Comfort Package further enhances noise comfort. This includes acoustically effective laminated glass on the front side windows and additional insulation in the interior. On the panoramic roof, various wind deflectors, covers and seals with improved geometry ensure high noise comfort despite the large roof opening.

Systematic digitalization and unusual materials

The new EQE: the interior design

The EQE is the new executive class sedan from Mercedes-EQ. With this completely new vehicle, the designers had the opportunity to take a completely new approach to the interior design as well. They used this freedom and, in addition to the MBUX Hyperscreen, relied on consistent digitalization and avant-garde design for many other elements.

Like the EQS, the EQE is based on a large electric platform from Mercedes-EQ. For the designers, this went hand in hand with the vision of systematic digitalization of the interior. The optionally available MBUX Hyperscreen implements this vision in a particularly impressive way: the entire instrument panel is one ultimate widescreen. This determines the aesthetics of the entire cockpit and interior. The real glass appears to drape itself three-dimensionally over the entire width of the vehicle like a wave - a unique feature in automotive construction to date.

The high-resolution screens merge seemingly seamlessly under the shared glass cover. The graphic appearance of their MBUX content is perfectly coordinated. The MBUX Hyperscreen is integrated into the instrument panel in minimalist fashion. Only a fine frame in silver shadow, a band of nozzles and a narrow leather ledge enclose the MBUX Hyperscreen. The leather ledge is reminiscent of the lower section of classic instrument panels.

The vent band spans across the entire width at the top and is very slim at the same time. These extreme proportions, together with the glass wave of the MBUX Hyperscreen, create the avant-garde architecture of the cockpit. For further details on the MBUX Hyperscreen, see separate chapter.

The dominant outer vents have a turbine design. They deliberately play on the theme of hyper analogue through the contrast between high-tech precision mechanics and digital, glass display world. The intricately designed turbine blades distribute the airflow efficiently.

The front section of the center console joins the instrument panel and stands freely in space. It is a visual reference to the new drive architecture – due to the electric powertrain, no transmission tunnel is necessary. Flowing leather surfaces with intricate seam dressings create a modern and luxurious impression in combination with the large-scale real wood blind. At the same time, there is plenty of practical storage space available.

The standard model without MBUX Hyperscreen has a slightly different center console. There is a soft armrest in the rear section. It is first visually interrupted before being transitioned into the floating central display. The smooth transition from 3D in the center console compartment to 2D on the touchscreen is seamless, i.e. without interrupting the glass look, and is unique.

Door trim modern, avant-garde and extremely reduced design

The vent band from the cockpit is visually continued in the driver's doors. A floating control cluster with integrated door opener and seat controls takes over the functional interpretation of formerly purely decorative elements. The door center panel develops in a sensual, dynamic movement from the vertical surface into the horizontal and thus integrates the armrest seamlessly. The front section of the armrest is designed as a metallic high-tech element that can be used as a free-floating grab and pull handle and contains the power window switch. In the dark, this floating, avant-garde aesthetic is particularly impressive thanks to an ambient light corona.

Seats: elaborately processed materials and perforations

Standard interior equipment includes the comfort seats. Despite their simplicity of design, they captivate with their sculptural beauty. Wrap-around surfaces in the side bolsters create the body support and stand in stark contrast to the seat center panel. It has a sophisticated seam pattern similar to a fan palm.

In combination with AMG Line interior, the EQE receives the sports seats. These are characterized by a slim and monolithic shape and act like integral seats. The seat surfaces are designed in such a way that they give the impression of draped-on leather covers. The technical term is "layering".

Common features of all leather seats are the dynamic graphic patterns with highly elaborate perforations. Here, too, you will find the hallmark Mercedes-EQ combination of the highest standards in materials, ambience and workmanship as well as state-of-the-art technology.

Color & trim: avant-garde and tradition for a special ambience

Avant-garde as well as traditional materials and colors give the interior a special atmosphere.

The modern delicate structure NEOTEX combines the look of nubuck leather and high-tech neoprene. It is found on the instrument panel, the armrest and the seats of the interior.

Six coordinated color combinations in the interior emphasize the generous feeling of space. The EQE is immersed in a progressive and luxurious color scheme of warm and cool tones. Colors such as Sable Brown/Neva Grey and Biscaya Blue/Black add the finishing touches to the soft and emotive design. The color rose gold, derived and evolved from the electric coil, emphasizes the design of the vent band and is used as a contrasting color.

The innovative trim parts make a key contribution to the aesthetics in the EQE. Three examples: a new trim in brown natural grain wood with grey printing of magnolia wood. The anthracite 3D relief-look trim, on the other hand, has fine metallic pigments. The different lighting situations in the vehicle subtly change the appearance and enhance the perceived value.

The laser-cut trim elements backlit with Mercedes-Benz pattern also create a special ambience. The star pattern is lasered into the plastic trim and is adaptively backlit. Innovative wood trim can also be selected, for example anthracite open-pore fine line lime wood.

A special welcome & goodbye scenario[1] has been developed for the Mercedes-EQ models, which is also coordinated with the ambient lighting.

UX design: multiple display styles and modes to choose from

As with the EQS, the functional content and operating structure are adapted to electric driving. Visually, all graphics are designed in a new color scheme of blue/orange throughout. The classic cockpit display of the two round dials has been reinterpreted with a digital lightsaber in a glass lens. All content relevant to driving can be accessed between the round dials.

The "sport" display takes the form of a spatial power bar and conveys the relevant driving status (Drive, Accelerate, Charge) emotionally and impressively. The central object here is a "G-force puck", which dynamically moves in line with the acceleration forces.

The appearance of the screens can be individualized with three display styles (Understated, Sporty, Classic) and three modes (Navigation, Assistance, Service).

1 Available in combination with the Burmester® surround sound system

For a very calm interior impression, the Understated mode familiar from the S-Class has been adapted. In the EQE, the content of the displays is reduced as much as possible and coordinated with the color change of the ambient lighting in seven screen color worlds. In "Assistance" mode, important events such as lane changes or target distance control as well as the infrastructure and detected users on the road (cars, motorcycles, trucks) are displayed.

The EQE 350 as a harbinger of a model family

The new EQE: electric drive

The models available at launch are the EQE 350 with 288 hp, and a second model. Further versions will follow. The battery has ten modules with a usable energy content of around 90 kWh, and the range of up to 660 km according to WLTP is absolutely suitable for longer drives.

All EQE models have an electric drivetrain (eATS) on the rear axle. The later versions with 4MATIC also have an eATS on the front axle. In the 4MATIC models, the Torque Shift function ensures intelligent, continuously variable distribution of drive torque between the rear and front electric motors and thus the use of the most efficient eATS in each case. The modular powertrain concept ensures high overall performance and long range.

The electric motors on the front and rear axles are permanently excited synchronous motors (PSM). With the PSM, the rotor of the AC motor is fitted with permanent magnets and therefore does not need to be supplied with power. The magnets – and thus the rotor – follow the rotating alternating current field in the stator windings. In the EQE, Mercedes-Benz uses what is known as a pull-in winding for a particularly strong magnetic field. The engine is referred to as synchronous because the rotor turns at the same rate as the magnetic field of the stator. The frequency is adjusted in the power electronics converters to the speed requirements of the driver. The advantages of this design include high power density, high efficiency and high power constancy. The motor on the rear axle is particularly powerful due to its six-phase design: it has two windings with three phases each.

Cooling: sophisticated thermal concept for high load capacity

Consistently producing high performance and multiple accelerations without a drop in power characterizes the EQE's drive philosophy. This includes a sophisticated thermal concept with some special features. What is known as a water lance in the shaft of the rotor cools it from the inside. Other cooling elements in the cooling circuit are fins on the stator, a needle-shaped pin-fin structure on the inverter and a transmission oil cooler. This also brings more efficiency when driving in cooler temperatures, as the heat exchanger serves to heat the transmission oil and thus reduces friction in the transmission.

Intelligent recuperation: one-pedal driving to a standstill

The EQE offers several variants of energy recovery by means of recuperation: in this process, the high-voltage battery is charged by converting the mechanical rotary motion into electrical energy during overrun or braking mode. The driver can manually select the deceleration in three stages (D^+, D, D^-) as well as the gliding function via shift paddles behind the steering wheel. Also available: D^{Auto}.

ECO Assist also offers situation-optimized recuperation - deceleration is so strong or weak that it ultimately results in the most efficient driving style. Recuperative deceleration is also used as far as possible for vehicles detected ahead until they come to a standstill, for example at traffic lights. The driver does not need to press the brake pedal for this – allowing for one-pedal driving.

Noise and vibration comfort: conceptual advantage plus extensive measures

As a sedan with a trunk lid, the EQE's concept is well equipped to offer a high level of NVH comfort. Numerous measures contribute to this:

The design of the electric powertrains (eATS) takes noise and vibration comfort (NVH - Noise, Vibration, Harshness) into account. The magnets are arranged inside the rotors in an NVH-optimized way (known as 'sheet metal cut'). This also reduces the use of rare earths. The shape of the winding, what is known as the stator tilt, also supports vibration comfort, especially at low speeds. In relation to the permanent magnets of the rotor, the coils of the stator are obliquely wound. Otherwise, what is known as cogging torque could occur. This would lead to slight but unpleasant vibrations when driving very slowly.

In addition, the eATS have a special foam mat all around as an NVH cover. The inverter cover has a sandwich construction of three metal and plastic layers. The eATS are doubly decoupled from the body via elastomeric bearings: at the front axle opposite a supporting frame and this against the body, at the rear axle with a subframe.

Highly effective spring/mass components provide continuous sound insulation from the crossmember under the windshield to the floor of the trunk. Acoustic foams are inserted into many carriers during body-in-white construction.

The electric refrigerant compressor has an NVH cover as encapsulation. In the rear-wheel-drive EQE, it is also soft-suspended, while in the 4MATIC models it is bolted directly to the front eATS. The operating strategy of the refrigerant compressor was designed for the highest possible noise and vibration comfort. Certain rpm ranges at which disturbing resonances may be audible when stationary or in a traffic jam are avoided or quickly passed through.

Fast laps in the hall

The new EQE under the magnifying glass: the eDrive test benches

One fast lap after another on the high-speed oval in Nardò in southern Italy, winding uphill and downhill stretches on the Swabian Jura or stop-and-go traffic for hours on the Stuttgart Weinsteige. And without ever leaving their workplaces in Untertürkheim, because they "drive a car without a car", Mercedes-Benz tests the drives of electric cars on eDrive test benches.

The electric drive of models in the fast-growing Mercedes-EQ family is being tested on a total of 13 test benches in Untertürkheim. Of these, seven are pure eATS test benches, where the power comes from a special direct current source, what is known as a battery simulation. On the six eDrive test benches, testing also includes the battery and the complete charging components of the vehicle. In addition, there are 13 test benches at the Nabern development site.

The test benches are connected to a monitoring room with computers. The most important measurement parameters for the test operation are visualized on one of the many monitoring screens. They tell the test bench driver in real time during the test whether everything is in order or whether a problem is imminent. Almost year round, the testing operation runs around the clock. Over the weekends, there is an on-call service; automatic shutdowns are communicated to the staff members responsible via instant messages or push messages on their smartphones. Remote access to the automation, diagnostic and measuring computers is possible.

The trial program: a whole car lifetime is simulated

All electric drivetrains (eATS) for all series are tested on the test benches. Both in terms of function and efficiency as well as durability. On the test benches, the eATS are coupled to load machines via the drive shafts installed in the vehicle - just like the drivetrain with a combustion engine and transmission on conventional test benches. At each rotational speed, they simulate different stresses on the e-drive.

The testing programs depict high-speed and road endurance runs. For this purpose, the test benches are programmed with data from real routes, topography and corresponding load conditions, for example acceleration, staying on the gas, kickdown or recuperation. For example, Nardò, the Swabian Jura and the Stuttgart Weinsteige take place in the hall. And for security reasons, without spectators.

With accelerated endurance runs, an entire car lifetime is simulated within a few months and with many megawatt hours of electricity. In this way, weak points can be detected in the shortest possible time and the drivelines optimized in good time before series production starts.

How long an eATS is tested on the test bench depends on the respective test program. The range extends from several weeks for testing individual functions to a whole year for an endurance run.

Powerful cell chemistry meets intelligent software

The new EQE: the traction battery[1]

The scalability of the battery system in the new Mercedes-EQ models of the luxury and premium class enables the realization of different range and performance variants. In the EQE, the lithium-ion battery consists of ten modules. The innovative battery management software, developed in-house, allows updates over the air (OTA). In this way, the energy management of the EQE remains up-to-date throughout the life cycle.

Battery development is a decisive factor in Mercedes-Benz's electrification strategy. After all, the battery is the heart of an electric car and makes a decisive contribution to, among other things, the range and thus the driving characteristics of the electric vehicle. With the EQS, a new generation of batteries with significantly higher energy density has been launched, from which the EQE now also benefits. The new batteries set standards in terms of performance, efficiency and charging capacity.

They also meet the high Mercedes requirements in terms of safety, durability and sustainability. Mercedes-Benz issues a battery certificate for its high-voltage batteries, and thus a performance warranty for customers: 10 years or a mileage of 155,000 miles with a defined residual capacity.

Comprehensive battery expertise

The highly efficient batteries were developed entirely in-house by the team of experts at the Mercedes-Benz Battery Competence Center. The software for the intelligent management system was also developed and programmed in-house. The batteries are produced in the Hedelfingen section of the Stuttgart-Untertürkheim site.

A lithium-ion battery with ten cell modules is installed in the EQE. In the case of the battery, a major step has been achieved in terms of the sustainability of the cell chemistry: the optimized active material consists of nickel, cobalt and manganese in a ratio of 8:1:1. This reduces the cobalt content to less than ten percent. The continuous optimization of recyclability is part of Mercedes-Benz's holistic battery strategy. The aim is to be able to dispense entirely with materials such as cobalt through the use of innovative post-lithium-ion technologies.

Intelligent operating strategy for maximum range

The battery is integrated into the intelligent thermal management of the EQE. If the intelligent navigation with Electric Intelligence is activated, the battery is preheated or cooled as needed while driving to reach the best possible temperature for efficient charging at the charging point. The desired temperature range of the battery is achieved with the aid of the cooling circuit and a PTC (Positive Temperature Coefficient) booster heater integrated into it.

Complex protection concept for safety

As a matter of principle, Mercedes-Benz applies very high safety standards to all of its models. This means that, in many cases, internal Mercedes-Benz safety standards exceed legal requirements. The crash-related requirements in particular are aligned to the "Real Life Safety" philosophy. In the process, findings from internal accident research are incorporated into the development specifications. Alongside verification of crash behavior, all Mercedes-Benz vehicles undergo additional component tests at system level.

1 Data on power consumption and range are provisional and were determined internally in accordance with the "WLTP test procedure" certification method. Confirmed TÜV figures, EC type approval and certificate of conformity with official figures are not yet available. Differences between the stated figures and the official figures are possible.

The battery sits in a crash-protected area in the underbody, embedded in the body shell structure including an extruded aluminum profile on the side. In extrusion, a heated block of metal is forced through dies and transformed into a continuous profile, which is then cut to fit. In this way, highly complex profiles can be produced that are precisely tailored to the requirements. The housing with energy absorbing structures at the front and side as well as a rigid, double-walled base plate provide additional protection for the modules. The test criteria include, among other things, the battery behavior under shock load and in the event of foreign object penetration. Overheating and overcharging were also simulated and tested. In addition, there is a separate, multi-level safety system for everyday operation. This includes, for example, temperature, voltage or insulation monitoring as a continuously monitoring safety system. If an error occurs, the battery is switched off.

Production: battery systems from Hedelfingen

The batteries for the Mercedes-EQ electric vehicles are supplied by the global battery production network with factories on three continents. Local battery production is a key success factor for Mercedes-Benz's electric initiative.

The battery systems for the EQE are produced in the Hedelfingen section at the Stuttgart-Untertürkheim site. Absolute precision is required in their manufacture. The battery systems consist of a variety of components, including ten cell modules and what is known as the EE compartment for the intelligent integration of the power electronics. It is assembled at the Mercedes-Benz site in Berlin.

The Mercedes-Benz Hedelfingen plant will have carbon-neutral production from 2022. The plant is a prime example of the transformation of production sites as part of the Mercedes-Benz Electric First strategy. The efficient and seamless integration of battery production alongside existing transmission production transforms Hedelfingen's traditional role as a site for conventional powertrain components into an important part of the company's global battery production network.

Mercedes-Benz has already agreed the CO_2-neutral production of battery cells with two major suppliers. The supplier network accounts for a substantial share of value creation, and is therefore of decisive importance for the decarburization targets. Because of the higher energy requirements in the production of fully electric vehicles, the supplier network is a key component in achieving the climatic targets of Mercedes-Benz.

Always connected

The new EQE: the charging functions

Three charging programs are offered in the EQE - Standard, Home and Work. Within these, parameters such as departure time, air conditioning and maximum charge level can be preset. The Home and Work charging programs can be activated based on location. This means that they are switched on automatically as soon as the vehicle is parked at a charging point at the GPS positions stored in the system. The user is informed about this through MBUX.

The EQE also has these intelligent charging functions:

- ECO Charging is a take-it-easy program for the battery. Various measures reduce the battery load during charging and slow down the natural ageing process of the battery. For example, the maximum charging capacity is reduced, a charging limit of 80 percent is observed and charging is delayed based on the set departure time.
- With the charging interruptions function, the customer can specify time periods during which the AC charging processes are paused. Electricity costs can be saved as a result, for example.
- In Japan, bidirectional charging with the EQE will also be possible, i.e. charging in both directions. The CHAdeMO ("Charge de Move") charging standard there supports bidirectional charging. This is the prerequisite for the V2G (Vehicle-to-Grid) and V2H (Vehicle-to-Home) applications. Thus, for example, the EQE can serve as a temporary storage unit for electricity from the domestic photovoltaic system or supply the household with energy in the event of a failure of the public power grid.

The charging components of the EQE

A latest-generation charging system sits above the rear axle of the EQE. It can be used to charge the battery via the public power grid with single-phase or three-phase alternating current and an optional charging capacity of up to 22 kW in Europe. In addition, intelligent wallboxes from national partners are available to customers in the individual markets. Mercedes-Benz also offers an installation service for these wallboxes. This includes a preliminary check of the installation conditions, a detailed consultation and of course the installation.

A DC box with a charging capacity of up to 170 kW is fitted on board for (fast) charging via direct current. High charging currents can be maintained for a long time through temperature and charging management. Power for up to another 250 kilometers (WLTP) is recharged in just 15 minutes[1].

The actual charging time depends on the battery size, the available infrastructure and the country-specific vehicle equipment. The charging socket is located at the rear right of the vehicle and is designed according to market requirements:

- Europe and the USA will receive the CCS system (Combined Charging System), which allows charging with direct and alternating current via the same connection.
- The vehicles intended for China (GB/T plug standard) on the other hand will also have a separate charging socket for DC charging, as will Japan (CHAdeMO standard). A twin charging socket is used here; it combines the separate AC and DC charging sockets under one charging flap.

1 Charging speed at DC fast charging stations with 500 amps. Power consumption figures are provisional and were determined internally in accordance with the "WLTP test procedure" certification method. Confirmed TÜV figures, EC type approval and certificate of conformity with official figures are not yet available. Differences between the stated figures and the official figures are possible.

With the new Plug & Charge function, Mercedes me Charge customers can charge the EQE particularly conveniently.

Because the shortest route is not always the fastest

The new EQE: Navigation with Electric Intelligence

As far as Navigation with Electric Intelligence is concerned, the name says it all. Because it plans the fastest and most convenient route, including charging stops, based on numerous factors and reacts dynamically to traffic jams or a change in driving style, for example. With the EQE, Navigation with Electric Intelligence is particularly advanced, for example, it is able to calculate estimated charging costs per charging stop. Furthermore, the customer can edit the planned routes individually by adding in preferred charging stations along the route or excluding proposed charging stations.

While a conventional range calculator relies on past data, the Navigation with Electric Intelligence system looks into the future. The energy demand is computed for the calculation of the route. The topography, route, ambient temperature, speed, heating and cooling requirements are all taken into account. Further factors include the traffic situation along the planned route, as well as the available charging stations that can be found there, their capacity and payment functions. Calculation takes place in the Cloud and is combined with on-board data.

The customer does not necessarily always have to take on a full charge, but will be given a specific recommendation as to the required charging time at the charging station. The charging station stops will be planned in the way that provides the maximum benefit for the overall traveling time: under certain circumstances, two short charging stops with a higher charging power can be more advantageous than charging once for a long time. In addition, Navigation with Electric Intelligence automatically adjusts the vehicle's charging settings and optimizes them for fast charging along the route.

MBUX displays whether the available battery capacity is sufficient to return to the starting point without charging. Charging stations along the route that have been added manually are given preference in the route calculation. Proposed charging stations can be excluded. The estimated charging costs per charging stop are calculated.

If there is a risk of not reaching the destination or the charging station with the selected settings, Active Range Monitoring issues the prompt to activate ECO driving functions. In addition, the driving speed for reaching the next charging station or the destination is calculated and displayed in the speedometer. Under the menu item "Range", the EQE driver can switch off various energy consumers to increase the range and activate the ECO driving functions to support a more efficient driving style.

Further reducing the carbon footprint with green power

The new EQE: Mercedes me Charge

With Mercedes me Charge, customers can charge green at every public charging station throughout the United States. High-quality guarantees of origin ensure that as much green power from renewable energies is fed into the grid as is withdrawn via Mercedes me Charge. In the first two years after the purchase of an EQE, there is no basic charge for Mercedes me Charge and thus Green Charging for customers. With the new Plug & Charge function, the EQE can be conveniently charged.

Mercedes me Charge is one of the largest charging networks worldwide: it currently has more than 530,000 AC and DC charging points in 31 countries, and nearly 60,000 public places to charge in the USA. At selected charging stations, such as Electrify America's fast charging network, green power is already being offered. Mercedes me Charge is now significantly expanding this opportunity to further reduce the carbon footprint: with Mercedes me Charge, customers are able to charge green at every public charging station throughout the United States. In addition, the functionality of Mercedes me Charge in MBUX will be expanded to include functions such as filtering and forecasting the availability of charging stations.

How Green Charging works: to promote the use of electricity from renewable energies, Mercedes-Benz uses guarantees of origin to 'green' the charging process, whose quality is defined by an eco power label. This ensures that an equivalent amount of electricity from renewable resources is fed into the grid to compensate for the charging of an electric vehicle. Amounts of energy used for charging are thus offset with green power after the actual charging process, also creating incentives to invest in renewable energy plants. In the first two years after the purchase of an EQE, there is a fee for Mercedes me Charge. The prices of the charging operator may vary. Green charging and driving become tangible with MBUX.

Plug & Charge - simpler and more convenient charging

With the new Mercedes me Charge Plug & Charge function, the EQE can be charged even more conveniently at Plug & Charge-enabled public charging points: when the charging cable is plugged in, the charging process starts automatically; no further authentication by the customer is required. The vehicle and the charging station communicate directly via the charging cable.

Furthermore, Mercedes me Charge customers continue to benefit from the integrated payment function with automatic payment. The customer is able to choose their preferred payment method once, then every charging process is then automatically debited – including charging abroad. The individual charging processes are clearly listed in a monthly invoice.

Whether a charging station is Plug & Charge-compatible can be seen by the charging station details shown on the central display of the EQE and in the Mercedes me App. It is also possible to search for specific, suitable charging stations. This convenient authentication method will initially be available at the Electrify America fast charging stations throughout the United States. Plug & Charge is the fourth way to access charging points, alongside enabling via MBUX on the vehicle's media display, the Mercedes me App and the Mercedes me Charge card.

Mercedes me App: easy operation on smartphone and tablet

The Mercedes me App offers many improved and new functions since the last revision. These include a filter option that allows the charging points to be sorted according to criteria such as availability or charging capacity. The likelihood over the course of the day of a particular charging point being busy is also determined and displayed on the basis of a probability calculation.

High levels of driving dynamics and handling

The new EQE: the suspension

The suspension of the new EQE, with four-link front suspension and multilink rear suspension, is closely related in design to the new S-Class. Rear-axle steering with a steering angle of up to 10° is available as an option for ease of maneuverability in town and agility out of town. Optionally, the EQE is also available with AIRMATIC air suspension with ADS+ adaptive damping system.

The EQE has the proven four-link front suspension. Its multilink rear suspension is designed to integrate the rear-axle steering. The suspension subframe carriers and the elastomeric bearings of the rear axle struts were improved in terms of NVH and driving characteristics by conducting extensive simulations and driving tests.

The optional AIRMATIC air suspension responds particularly perceptively, as it combines air suspension bellows with adaptive ADS+ dampers whose characteristics can be fully automatically varied at each individual wheel, in both the compression and rebound stages. While driving, a sophisticated sensor system and algorithms set the dampers according to the quality of the road to ensure that, for example, driving over a bump with just one wheel is not transmitted to the entire axle and the interior. Spring and damper are combined in one strut on the front axle.

This level control is part of AIRMATIC. It keeps the ground clearance constant irrespective of the vehicle load, but also makes changes when needed. By way of example, in the SPORT program the vehicle body is lowered by 1 inch at high speeds above 75 mph to reduce aerodynamic drag and increase handling stability. If the vehicle drops below 50 mph, the body level returns to the initial position. Up to 25 mph the body can be raised by 1 inch at the touch of a button, above 30 mph it is automatically lowered back to normal level.

As maneuverable as a compact car: both axles can do the steering

Thanks to rear-axle steering (optional extra), the EQE feels as maneuverable as a compact car in the city. The steering angle at the rear axle is up to ten degrees. The turning circle is reduced from 41 to 35 feet with rear-axle steering.

The interaction between front-axle and rear-axle steering has been designed to achieve agile response with low steering effort in city and country road driving, but at the same time very high stability. This results in i.e. small side-slip angles and a high level of yaw suppression. At high speeds the focus is more on stability, though without compromising precision and responsiveness. This added value is achieved by integrated actuation of the steering and brakes (ESP®), and considerably improves handling safety as a result.

Depending on the tires selected, customers can choose between two versions of the optional rear-axle steering with a maximum steering angle of 4.5° and 10°.

DYNAMIC SELECT: the EQE drives the way the driver wants it to drive

The driver can individually modify the characteristics of the powertrain, ESP®, suspension and steering. The selection is made using a control at the lower end of the central display. The default setting is the COMFORT drive program, with SPORT, ECO and INDIVIDUAL available as alternatives. The selection is acknowledged by acoustic and visual feedback. The desired drive program is shown as the status and depicted in the central display.

Zero-layer design: the most important things are now only one click away

The new EQE: MBUX (Mercedes-Benz User Experience)

MBUX (Mercedes-Benz User Experience) has radically simplified the operation of a Mercedes-Benz. Introduced in 2018 in the current A-Class, more than 1.8 million Mercedes-Benz passenger cars are now on the road with it, and the Vans division is also relying on MBUX. The second generation of this adaptive system was launched in the new S-Class, followed by the next big step with the EQS. With adaptive software, the control and display concept completely adapts to its user and makes personalized suggestions for numerous infotainment, comfort and vehicle functions. With the zero-layer design, the user does not have to scroll through submenus or give voice commands. The most important applications are offered situationally and contextually on the top level in the field of view. This relieves the EQE driver of numerous operating steps. Mercedes-Benz has integrated numerous music streaming providers holistically into the MBUX Infotainment system with the "Online Music" service.

Infotainment systems offer numerous and extensive functions. Several operating steps are often required to control them. In order to reduce these interactive steps even further, with the aid of artificial intelligence Mercedes-Benz has developed a user interface with context-sensitive awareness.

The MBUX system proactively displays the right functions at the right time for the user, supported by artificial intelligence. The context-sensitive awareness is constantly optimized, both by changes in the surroundings and by user behavior. The 'zero layer' offers the user dynamic, aggregated content from the entire MBUX system, and thus the associated services, on the uppermost level of the MBUX information architecture.

Mercedes-Benz has investigated the usage behavior of the first MBUX generation. Most of the use cases fall within the Navigation, Radio/Media and Phone categories. The navigation application with its full range of functions is therefore always in the center of the visual display unit.

Over 20 other functions - from ENERGIZING COMFORT to birthday reminders and suggestions for the to-do list - are automatically offered with the help of artificial intelligence when they are relevant to the customer. The developers have internally christened these suggestion modules, which are displayed on the zero-layer interface, "Magic Modules".

Here are three representative use cases. The user can accept or reject the respective suggestion with just one click:

- When approaching a charging station that is enabled for Plug & Charge, the Magic Module 'Charging' automatically appears. The driver can then start charging immediately.
- If someone always calls one particular friend on the way home on Tuesday evenings, in future they will always receive a suggestion regarding this particular call on this day of the week and at this time. A business card appears with their contact information and – if it is stored – their photo. All the suggestions from MBUX are coupled with the profile of the user. If someone else drives the EQE on a Tuesday evening, this recommendation will not be made - or another one will be made, depending on the habits of the other user.
- If the user regularly switches on the heating of the steering wheel in addition to the seat heating, for example, this is suggested to them as soon as they activate the seat heating.

MBUX: a milestone as the interface between driver, passengers and vehicle

The EQE has the latest MBUX generation. The impressive MBUX Hyperscreen is available as an option. There, the front passenger also has their own screen.

Face recognition with cameras in the driver display is used for a wide range of assistance and comfort functions. These include biometric authentication, ATTENTION ASSIST drowsiness warning and adjusting the outside mirrors to the pre-set position. In combination with the standard Display Package or the MBUX Hyperscreen, a fingerprint scanner for driver authentication is on board.

Hey Mercedes: the voice assistant can now do even more

Compared with the previous MBUX generation, the "Hey Mercedes" voice assistant is even more capable of dialogue and learning by activating online services in the Mercedes me App. Moreover, certain actions can be performed even without the activation keyword "Hey Mercedes". These include taking a telephone call. "Hey Mercedes" now also explains vehicle functions, and can help for example when asked how to connect a smartphone by Bluetooth or where the first-aid kit can be found. "Hey Mercedes" is now also able to recognize vehicle occupants by their voices. Once the individual characteristics of the voice have been learned, this can be used to access personal data and functions by activating a profile.

Online music: music streaming with millions of songs to choose from

With the "Online Music" service, Mercedes-Benz has now fully integrated the major music streaming services - Spotify, Amazon Music and recently also Apple Music - into the MBUX infotainment system. MBUX enables access to the personal user profile at the linked music providers. This allows customers to seamlessly access their favorite songs and playlists and discover millions of songs as well as curated playlists. Operation is intuitive using the MBUX voice assistant via "Hey Mercedes" and via touch controls on the steering wheel or central display.

Personalization is simple and convenient

A personal profile can be created directly in EQE and synchronized with existing profile data of the Mercedes me account. By scanning a QR code with the Mercedes me App, the vehicle is automatically connected to the Mercedes me account.

Personal preferences such as a favorite radio station and preselected settings can be transferred to any seat via the personal Mercedes me profile. Up to seven different profiles with a total of around 800 parameters are possible in the vehicle. As the profiles are stored in the Cloud as part of Mercedes me, the profiles can also be used in other Mercedes-Benz vehicles with the new MBUX generation.

In addition to the classic entry of a PIN, a special authentication procedure ensures a high level of security. Fingerprint, face and voice recognition are combined. This allows access to individual settings or verification of digital payment processes from the vehicle.

Welcome to the big in-car show

The new EQE: the MBUX Hyperscreen

The MBUX Hyperscreen is the absolute highlight in the interior. This large, curved screen unit sweeps almost from A-pillar to A-pillar. Three screens sit under a common bonded glass cover and visually merge into one display. In addition to the zero-layer design, the MBUX Hyperscreen offers intuitive touch operation with haptic feedback and force feedback. The scratch-resistant glass is coated to make cleaning easier.

With the MBUX Hyperscreen (optional extra), three displays merge almost seamlessly into one another to create an impressive screen band over 56 inches wide: driver display (screen diagonal: 12.3-inch), central display (17.7-inch) and front passenger display (12.3-inch) appear as one visual unit.

The selected display style is shown uniformly on all screens; and the brightness is homogeneously adapted to the lighting conditions in the interior. The control panels for the automatic climate control system are located in the lower area of the central display. These remain permanently displayed so that the driver and front passenger can directly adjust the temperature and ventilation.

For particularly brilliant display quality OLED technology is used for the central and front passenger displays. This is where the individual image points are self-luminous; non-controlled image pixels remain switched off, which means that they appear deep black. The active OLED pixels, on the other hand, shine with a high color brilliance, which also means high contrast values – irrespective of the perspective and the light conditions.

The central and front passenger displays also provide haptic feedback. When a user touches certain spots on the touchscreen, actuators (eight in the central display, four in the front passenger display) trigger a perceptible vibration of the glass cover. The user thus feels pulses on the smooth surface, which give the impression of a mechanical switch. Another operating aid known from high-quality consumer electronics products is the force feedback of both displays. For this purpose, a metallized foam is integrated into the device as a force sensor. Different levels of pressure on the glass change the response, for example, with added pressure MBUX then jumps to another menu level.

The 12.3-inch OLED display for the front passenger gives them their own display and control area, making journeys more enjoyable and entertaining. If the front passenger seat is not occupied, the screen becomes a digital decorative image. The customer can choose from various decorative images, including a starry sky, i.e. the Mercedes-Benz pattern.

The curved glass cover is made of particularly scratch-resistant aluminum silicate glass and is coated to make cleaning easier. For example, fingerprints can be easily removed with a microfiber cloth.

Ergonomic, sophisticated, robust: the development

During the development of the MBUX Hyperscreen, Mercedes-Benz engineers carried out extensive ergonomics studies with visual beams. The result is an optimized alignment of the MBUX Hyperscreen to reduce reflections caused by the curvature of the glass cover. In addition, the upper part of the windshield is shaded by a tinted strip.

Other details designed with the hallmark Mercedes-Benz meticulousness include the brightness of all three screens, which is adjusted to the respective ambient conditions. A light sensor above the central display is used to determine the illumination level in the driver and front passenger areas. In addition, the camera integrated in the driver display measures the ambient brightness. Both the brightness and the image content

of the displays are then adjusted. At the same time, this algorithm is less susceptible to scattered light and thus to misinterpretation of the measurement system.

Tolerance to high temperature differences, immunity to vibrations and protection against dust are among the tough automotive requirements for which the entire system has been designed. Age-related burn-in effects of OLED displays are countered with the help of various technical solutions. The ageing process of each individual pixel is permanently monitored and an automatic adjustment is carried out in the background to compensate for it. In addition, the displayed image information rotates slightly and imperceptibly counter-clockwise to reduce permanent strain.

Curved, bonded and printed: the production

The large glass cover is curved three-dimensionally using the molding process. This hot forming of glass at process temperatures of approx. 1202°F places the highest demands on mold making and process control and is used in the production of optical glass for camera lenses and smartphone glass covers. With the MBUX Hyperscreen, this process enables a distortion-free view of the displays across the entire width of the vehicle, regardless of the radius of the glass cover.

All displays are transparently bonded to the glass cover for a uniform refractive index curve to avoid reflections as much as possible. The central and front passenger displays are optically connected to the glass cover under vacuum. This dry-bonding process uses an adhesive material similar to double-sided adhesive tape. The LCD driver display, which is flat due to its design, uses a wet bonding process in which the adhesive material is liquid to compensate for the radius of the glass cover.

The black areas between the screens are printed onto the glass cover from behind using a screen printing process specially adapted to the curvature. The color of the black print was adapted to the reflection behavior of the OLED displays in order to achieve a homogeneous overall impression in a wide variety of lighting situations. For certain important warning lights to the right and left of the driver display, a mask is used during the screen printing process to leave out the corresponding symbol.

The MBUX Hyperscreen is surrounded by a continuous front frame in plastic. This visible part is painted in "Silver Shadow" using an extensive three-coating process. This paint system achieves an especially high-quality surface impression through extremely thin intermediate coats. The integrated ambient lighting included in the lower section of the MBUX Hyperscreen appears to make the display unit hover on the instrument panel.

Extensive precautions: the safety measures

The MBUX Hyperscreen is bolted directly to the cockpit crossmember for stability: the connection to a stabilizing magnesium support as the structural component of the MBUX Hyperscreen is made via aluminum brackets. Their honeycomb structure allows them to deform in a controlled manner in the event of a crash. For side impact protection, the glass cover also does not extend all the way to the doors. In the event of a severe side impact, there are also predetermined breaking points behind the side air vents.

Progressive luxury with special extras

The new EQE: the equipment features

As a base model, the EQE boasts a high-level of standard equipment. It is also available with AMG Line exterior and AMG Line interior. Further individualization is possible with numerous optional extras, three examples are given below.

- As an option, the EQE has **automatic comfort doors** at the front. When the driver approaches the car, the door handles extend. As the driver approaches further, the driver's door opens automatically. With one-touch operation, the automatic comfort doors can be closed conveniently and with little effort. In addition, the driver's door closes automatically when the brake pedal is depressed. The sensors on the underside of the doors and sensors of the parking assistance systems are used for obstacle detection. The comfort doors are linked to the Blind Spot Assist feature, which provides additional safety precautions.

- The **DIGITAL LIGHT** headlamp technology (optional extra) has a light module in each headlamp with three extremely bright LEDs whose light is refracted and directed with the help of 1.3 million micro mirrors. The resolution is therefore more than 2.6 million pixels per vehicle. This allows highly precise light distribution.

- The optional **Burmester® surround sound system** is a prerequisite for experiencing the specially designed Sound Experience with the two soundscapes Silver Waves and Vivid Flux. The high-end audio system with 15 speakers, 15 separate amplifier channels and a system output of 710 watts offers many more refinements. These include the three-dimensional surround sound, a personal sound setup, settings focused on individual areas of the interior, as well as the classy design of the speakers with grilles made of metal and Burmester® lettering. MBUX Entertainment is included and enables seamless operation of streaming services via the central display, the steering wheel or the "Hey Mercedes" voice assistant.

Emotive animations, color feedback and additional visual warnings

The new EQE under the magnifying glass: Active Ambient Lighting

The Active Ambient Lighting (optional extra) in the interior makes it possible to experience which electric driving mode the EQE is currently in: driving, boosting and recuperation are impressively staged with the help of over 100 LEDs. In addition, Active Ambient Lighting is integrated into the driving assistance systems and can visually support their warnings. Color feedback is possible when operating the climate control system or the 'Hey Mercedes' voice assistant, for instance. The ENERGIZING COMFORT programs are also visually supported.

The light band of the Active Ambient Lighting, comprising over 100 LEDs, is located above the louver trim element. Along the doors it continues into the rear. When switched off, a matte white line is visible. When Active Ambient Lighting is switched on, a clearly defined strip of light appears as if from nowhere - an extraordinary experience even during the day.

The individual light sources, which are controlled in real time, stage fluid presentations. For example, the welcome scenario shows a running light when entering the vehicle. Within the luminous line, different color gradients are possible in addition to the 64 individual colors. This makes electric driving a visual experience, too: driving, boosting and recuperation as well as the different charging states of the EQE are impressively staged.

As an additional contribution to accident prevention, Active Ambient Lighting integrates driving assistance systems and supports them with an animation. Active Brake Assist, for example, warns drivers of the risk of a collision by illuminating the instrument panel in red. With Active Blind Spot Assist, a red light in the door also signals a hazardous situation.

The MBUX voice assistant also comes to life visually and recognizes the position of the person speaking. Active Ambient Lighting signals, for example, that the system is waiting for a voice input.

Active Ambient Lighting is also integrated into the ENERGIZING COMFORT programs. In the Warmth program, for example, the perceptible warmth of the seat, steering wheel and surface heating is accompanied by warm orange-red animations of screen and ambient lighting. In the Vitality program, Active Ambient Lighting radiates a pink-red lighting mood throughout the interior.

Between comfortable tranquility and an interactive, rich sound experience

The new EQE: the Sound Experiences

Electric cars are inherently quiet. If desired, the ride in the EQE becomes an acoustic experience: with a holistic sound production, the sound experts from Mercedes have made the paradigm shift from the combustion engine to the electric car which is acoustically perceptible. An optional interior driving sound is available. It adjusts adaptively to the driving style and drive program.

A variety of soundscapes allows for an individual acoustic set-up. If the Burmester® surround sound system is on board, the EQE has the two soundscapes: Silver Waves and Vivid Flux. Silver Waves is a rich and clean sound. Aimed at EV enthusiasts, Vivid Flux is crystalline, synthetic yet warm. They can be selected or switched off as sound experiences on the central display. The additional soundscape Roaring Pulse can be activated as an over-the-air update. This sound experience is reminiscent of powerful machines, and is sonorous and extroverted.

Driver and passengers are greeted acoustically when approaching the vehicle and when getting in. A corresponding aura sound also accompanies exiting and locking the EQE. Also part of the particular soundscape is the driving sound, which is reproduced by the speakers in the interior. It stirs emotions and inspires. At the same time, the driving sound is interactive, as it responds to a good dozen parameters such as the accelerator position, speed or recuperation. The choice of drive program also influences the driving sound; in SPORT mode, for example, the sounds become more dynamic and further effects are activated. Intelligent sound design algorithms calculate the sounds inside the amplifier of the Burmester® surround sound system in real time, and the speakers reproduce them.

The algorithms and sounds for the sound design are created internally at Mercedes-EQ. In addition to physicists, the interdisciplinary team also includes sound designers, media designers and mechatronics specialists. In the acoustics laboratory, which is completely shielded from outside noise and vibrations, they work on the sound of the Mercedes EQ model family. The sound experts determine which emotions the soundscapes evoke in real traffic during test drives. The mobile listening tests take place with interactive demonstrator vehicles, including at the new Immendingen Test and Technology Centre (PTZ).

In order to achieve an interplay between the driver's action, the vehicle's reaction and the feedback of the sound, musical composition such as harmony theory is not the only foundation. The vividness of the soundscape varies as the result of many sound dimensions. In this way, the sound design creates a holistic, multi-sensory experience that interacts with the entire vehicle. This experience is in the area between comfortably quiet and precise feedback with emotionally appealing design.

HEPA filter against airborne pollutants

The new EQE: ENERGIZING AIR CONTROL Plus

The EQE is able to keep out fine particles, microparticles, pollen and other substances, thanks to its HEPA filter (High Efficiency Particulate Air) cleans the incoming outside air at its very high filtration level. In recirculation mode, the air is filtered by the interior air filter of the automatic climate control system. The activated carbon coating on the HEPA and cabin filter reduces sulphur dioxide and nitrogen oxides as well as odors. The HEPA filter is part of ENERGIZING AIR CONTROL Plus and uses the space under the front hood of the EQE. In 2021, the Austrian Research and Testing Institute (OFI) awarded the cabin air filter of this optional feature its "OFI CERT" ZG 250-1 certification for viruses and bacteria.

The system is based on filtration, sensors, a display concept and air conditioning. In combination with the intelligent fresh air/recirculating air switching, ENERGIZING AIR CONTROL Plus ensures good air in the vehicle interior. The particulate levels are also displayed in real time in MBUX. Using pre-entry climate control, it is also possible to clean the interior air before getting into the vehicle.

Thanks to its purpose design, the EQE has a very large filter system under the front hood. At 23/16/1.6 inches, the HEPA filter has almost the area of a sheet of A2 paper, i.e. it is about four times the size of a sheet of A4 paper. At 9.82 dm^3, its volume is almost three gallons. Filtration takes place in three stages, a coarse pre-filter retains leaves, snow and sand and traps larger particles. At the same time, it protects the HEPA filter from a high concentration of coarse particles. The separation in this HEPA (High Efficiency Particulate Air) filter uses a mechanical process by means of a synthetic membrane: the microfiber layer traps fine particles of the PM 2.5 to PM 0.3 class - these particles are therefore smaller than 2.5 µm. Up to 99.75 percent of particles of all sizes are separated, according to the filter's efficiency as certified by DIN EN 1822. The reduction of pollutants achieved at the filter is comparable to that in clean rooms and operating theatres.

In the third and final step, further fine particles as well as sulphur dioxide, nitrogen oxides and unpleasant odors are filtered out. The filtration of sulphur dioxide and nitrogen oxides is carried out by special activated charcoals in the HEPA filter and the interior air filter. Due to their pore structure, they have a very large inner surface area. Around 600 grams of activated carbon are used in the HEPA filter of the EQE. The adsorption area is equivalent to about 150 football fields. Activated charcoal is produced from coconut shells, which are a by-product of the cosmetics industry.

In 2021, Mercedes-Benz became the first vehicle manufacturer to receive the "OFI CERT" ZG 250-1 certification for the interior air filter from the Austrian Research and Testing Institute (OFI)[1]. Air filters with this certificate reduce bacteria and viruses directly at the filter. To prove their quality, the air filters must pass standardized tests and are checked using additional scientific analyses. The test results certify that ENERGIZING AIR CONTROL Plus has

- A virus capturing capacity of more than 86 percent in new condition
- A virus capturing capacity of more than 80 percent in aged condition after climate change test with different temperatures and humidity
- A bacteria capturing capacity of more than 90 percent in new condition
- A bacteria capturing capacity of more than 88 percent in aged condition after climate change test
- A very low re-shedding of filtered viruses on the back of the filter below the infection threshold

[1] ZG-250-1 (ofi.at)

Always informed: indication of fine particle values outside and inside the vehicle

Combined with the automatic fresh air/recirculating air mode, ENERGIZING AIR CONTROL Plus ensures good air quality inside the vehicle. The air-conditioned recirculated air is filtered several times in recirculation mode, and flushing with fresh air takes place at regular intervals. Using pre-entry climate control, it is also possible to clean the interior air before getting into the vehicle.

The particulate levels outside and inside the vehicle are also displayed in MBUX. They can be viewed in detail in the dedicated Air Quality menu. If the quality of the outside air is low, the system can also recommend closing the side windows or the sliding sunroof.

No.6 MOOD bittersweet: smile please!

The active fragrance of the EQE, which is part of the AIR-BALANCE Package, also appeals to the sense of smell. A special fragrance was composed for the new electric model: No.6 MOOD bittersweet is based on the aroma of dark chocolate.

The new nomenclature of the Mercedes fragrances is composed of an iconic number of the respective brand, the designation "MOOD" and the main ingredient of the fragrance. The Mercedes-EQ fragrances bear the number 6, as the first electric cars were added to the model range in 1906 with the "Mercédès Electrique" vehicles. Their electric wheel hub motors were powered by a battery. They were available as passenger cars, trucks, buses, ambulances and firetrucks in a wide variety of designs.

Acoustic oasis with summer rain, seagull sounds and rustling leaves

The new EQE: ENERGIZING COMFORT

The three ENERGIZING NATURE programs Forest Glade, Sounds of the Sea and Summer Rain offer an immersive, impressively realistic sound experience in the vehicle. These calming sounds were created in consultation with the acoustic ecologist Gordon Hempton. As with the other ENERGIZING COMFORT programs, other senses are addressed with lighting moods and images. The short sleep program during a break includes extended indoor conditioning: it closes the roller blind of the panoramic sliding sunroof (optional extra) and moves the driver's seat into the reclined position. This creates an atmosphere that is conducive to sleeping. The power nap can increase the driver's performance and give them renewed energy.

The ENERGIZING NATURE programs at a glance:

- Forest Glade: can help to escape the noisy daily routine and boost concentration. Birdsong, rustling leaves and a gentle breeze create a feel-good ambience. The program is rounded off by warm music soundscapes and subtle fragrance.
- Sounds of the Sea: can have a positive and relaxing effect through the combination of soft music soundscapes, wave sounds and seagull sounds. Warms or cools with the soothingly slow rhythm of ocean waves, combined with gusts of air from the air conditioning.
- Summer Rain: can serve as an acoustic oasis in noisy traffic, cooling and calming with sounds of raindrops on leafy canopies, distant thunder, pattering rain and ambient music soundscapes.

The sounds are based on the audio library "Quiet Planet", which the nature acoustician Gordon Hempton has created over the years. The Mercedes-Benz sound design department has arranged the sounds into ten-minute pieces and mixed them for the in-car experience. Individual musical compositions enhance the overall impression of the sounds of nature and their calming effect.

Power Nap: short recovery program for the driver during a break

During a break in the journey, i.e. at a service area or charging station, the Power Nap program can be selected. The program has three phases - falling asleep, staying asleep, waking up - and can increase the driver's performance and give them new energy. The short sleep program during a break includes extended indoor conditioning: the EQE ensures a sleep-promoting atmosphere by moving the driver's seat into a reclined position, closing the side windows and roller blinds, activating the ionization of the fresh and recirculating air and adjusting the ambient lighting accordingly. Soothing sounds and the depiction of a starry sky on the central display support falling asleep - if Power Nap has been started for the front passenger seat, this also appears on the front passenger display.

The pre-programmed wake-up phase is accompanied by a pleasantly activating soundscape, appropriate fragrance and briefly activated, discreet massage and seat ventilation. Finally, the seat is raised again and the roller blind in the roof liner is opened. This ends the program and returns the driver to the task of driving.

ENERGIZING COMFORT

The ENERGIZING COMFORT range in the EQE builds on the further advanced system of the S-Class. In addition to the three new ENERGIZING NATURE programs, it thus includes the programs Freshness, Warmth, Vitality, Joy and Comfort as well as Training and ENERGIZING Tips.

Visualization benefits from active ambient lighting and large screens with high-resolution animations. Passengers can join a program in progress from their seat ("Join" mode) or suggest their own program to other

passengers ("Share" mode). The voice assistant "Hey Mercedes" is integrated. A statement such as "I am stressed", for example, automatically triggers the Joy program with regenerative character. If the driver says "I'm tired", they are prompted to take a break and ENERGIZING COMFORT starts the Vitality program.

Two ENERGIZING packages are offered for the EQE, with the following features:

- The ENERGIZING Package includes ENERGIZING COMFORT and the AIR-BALANCE Package with fragrance, ionization and air filtration.

In conjunction with the fully electric seat adjustment, the EQE is optionally available with ENERGIZING seat kinetics. This function supports the advantageous change of the sitting posture during the journey through the smallest movements of the seat cushion and backrest.

Activating new functions after buying a new car

The new EQE: over-the-air technology (OTA)

The EQE offers the possibility to activate new vehicle functions via over-the-air technology (OTA) in a number of functional areas. This means that after purchase and the original new car configuration, some of the EQE's equipment can be adapted according to personal preferences. The OTA functions are available in the Mercedes me Store, and the range will be successively expanded. In addition to a classic purchase of individual functions, subscriptions, time-limited activations and free trial phases are also planned. The following is the OTA range available at the launch of the EQE:

The Individualization Package is available in the Mercedes me Store. It comprises:

- The additional sound experience "Roaring Pulse". It is reminiscent of powerful elements such as large-volume combustion engines, turbines and the forces of nature.
- Several entertaining mini-games such as Sudoku, Pairs and Shuffle Puck
- More coming-home/leaving-light animations like "Brand World".

If the EQE is equipped with DIGITAL LIGHT, DIGITAL LIGHT with projection function can also be activated via OTA. This enables the projection of auxiliary markings or warning symbols onto the roadway[1].

Highlight Mode can also be activated via OTA. Here the EQE introduces itself, activated by means of the voice assistant "Hey Mercedes". The various vehicle functions are shown in a video, and special features such as ambient lighting or seat massage can be experienced directly.

With two **digital safety functions**, the use of the EQE can be adapted to specific target groups. In both modes not only is the maximum speed restricted, but the acceleration capacity is also reduced:

- In beginner driver mode, the driving characteristics are deliberately gentler. Nevertheless, sufficient power reserves are available for overtaking. The drive program C is automatically activated, the drive programs Sport and Individual are locked. The maximum speed is limited to approx. 75 mph, ESP-OFF cannot be activated.
- The valet mode is intended for use by service personnel such as hotel staff. The characteristics are similar to the beginner driver mode. A maximum of approx. 50 mph is possible. Personal profile data such as the home address or "last destinations" are protected from unauthorized access.

The main user activates and deactivates these programs via their personal profile, which is protected with a PIN and/or biometric recognition, or conveniently via the Mercedes me App from the smartphone. The modes cannot be activated while driving, but only when the vehicle is stationary.

Independently of these new functions, it is also possible to update most of the onboard control units via OTA. This technology saves the customer time, as there is no need to visit a mechanic for this purpose. Furthermore, many functions of their vehicle remain up to date throughout its lifetime. The explicit consent of the user is always a precondition for OTA updates. Mercedes-Benz relies on mobile radio technology and the communication module installed in the vehicle to ensure the high security standard.

[1] Country restrictions apply.

Efficient use of waste heat from the powertrain

The new EQE: climate control

Even the heat is recycled in the EQE: this saves energy and thus increases the range. Pre-entry climate control is also not only pleasant, but equally efficient. The THERMATIC automatic climate control system with two climate zones is fitted as standard, while the THERMOTRONIC with four zones is available as an option. Sensitive sensor systems and intelligent recirculation controls are part of both.

The intelligent thermal management of the EQE comprises several circuits:

- The powertrain cooling circuit is used to cool the electric powertrain, the DC/DC converter and the charging components. The sophisticated thermal concept for high load capacity and multiple accelerations with consistently high performance also includes what is known as the water lance in the shaft of the rotor of the electric motor. Other cooling elements in the cooling circuit are fins on the stator and the needle-shaped pin-fin structure on the inverter. The transmission oil cooler also brings more efficiency when driving in the cold: the transmission oil absorbs heat from the more quickly heated overall system and thus becomes thinner, which reduces friction.
- A heating circuit for the interior is coupled with the powertrain cooling circuit. As soon as the heating is on, the heat flows through the heater core (small heating circuit, electric heater). If waste heat is present in the powertrain, the system switches to the large circuit. Only if its heat is not sufficient, for example at particularly low outside temperatures, is additional heat generated via the high-voltage PTC booster heater. Due to this efficient waste heat utilization, additional heating is often no longer necessary in the temperature range above 41°F, which occurs particularly frequently.
- The high-voltage battery has its own cooling circuit with separate cooler and chiller (heat exchanger between cooling and refrigeration circuit). In the interests of high durability, the battery is cooled with colder cooling water than the drivetrain during normal operation. At very high outside temperatures, the coolant is cooled by a chiller connected in parallel to the radiator using the refrigerant from the air conditioning system. This option is mainly used for particularly high fast-charging rates when the vehicle is stationary. Another high-voltage PTC booster heater is integrated into the battery circuit. It has the task of either heating the battery to a temperature level favorable for operation (at temperatures below minus 77°F) or heating it for possible fast charging (at temperatures below 50°C).
- The interior is cooled by a refrigerant circuit with electric compressor and evaporator. An air-cooled condenser in the cooling module is used for heat dissipation.

Pre-entry climate control: great climate right from the start

The departure time and desired interior temperature can be selected in advance via Mercedes me, remotely via app, or via the central display in the vehicle. Ideally, the EQE is heated or cooled during charging so that the energy required for this comes from the grid and does not compromise any range.

During preheating by the pre-entry climate control system, the seats are also heated in addition to the interior air - depending on the equipment. During pre-cooling, on the other hand, the electric air conditioning system switches on and thus lowers the interior temperature. Depending on the equipment, the seat ventilation is also activated.

Air conditioning systems: personal settings in the user profile

Individual climate comfort in the front seats is provided by the standard-fit THERMATIC automatic climate control system with two climate zones: driver and front passenger can set the temperature separately for their side and save it in user profiles. Thanks to the sensitive sensor system, the interior temperature is automatically kept constant - even in changing weather conditions and varying sunlight.

The integrated activated carbon-based interior air filter works very efficiently and can reduce pollen, pollutants and unpleasant odors in the incoming air in addition to dust and soot particles. The EQE automatically switches to recirculation mode when the system detects that the vehicle is in a tunnel via GPS or the air quality sensor registers corresponding values.

In addition to the comfort setting, the automatic climate control system also offers ECO and ECO+ operating modes. With ECO, the operation of the air conditioning is still possible without restrictions with reduced heating and cooling capacity. In ECO+ mode, only the fan and, if necessary, the waste heat from the eATS are used. The HV components compressor and heater, on the other hand, remain switched off. ECO and ECO+ reduce the energy consumption of the climate control functions, minimizing losses in vehicle range.

As an optional extra, the EQE is available with THERMOTRONIC automatic climate control with four climate zones. Here, even the rear passengers can enjoy a personal feel-good climate. They can adjust the settings on their own climate control panel. Another difference to the THERMATIC is the even more intelligent recirculation mode: a sensor for air quality and harmful gases continuously monitors the quality of the outside air drawn in and automatically switches to recirculation mode in the event of elevated pollutant levels.

A HEPA filter (High Efficiency Particulate Air) is part of the optional equipment ENERGIZING AIR CONTROL Plus. The HEPA (High Efficiency Particulate Air) filter has a very high filtration level that enables it to trap fine particles, microparticles, pollen and other substances that enter with the outside air. An activated carbon coating reduces sulphur dioxide and nitrogen oxides as well as odors.

Intelligent support while driving

The new EQE: the driving assistance systems

The basic functions of the systems in the Driving Assistance Package included as standard can be found here. The following are important highlights, often only available as part of the Driving Assistance Package Plus.

Active Distance Assist DISTRONIC

This intelligent system can maintain the preselected distance to vehicles ahead on all road types - highway, country road as well as in the city. Special features:

- Predictive speed regulation ahead of speed limits
- Reaction at a driving speed of up to 62 mph to stationary vehicles on the road
- Selection of DISTRONIC dynamics in MBUX, independently of DYNAMIC SELECT
- Adjustment of set speed and acceleration for maximum range
- With the Navigation with Electric Intelligence, the charging status at the destination or also at the intermediate charging point can be specified if desired when route guidance is activated. Active Distance Assist DISTRONIC then adjusts the acceleration behavior and, if necessary, the cruising speed to meet this specification.

Active Steering Assist

This assists the driver in following the driving lane. Special features:

- Lane detection at low speeds additionally with 360° camera
- Significantly improved availability and performance on bends on country roads
- Improved lane centering on highways
- Situation-specific off-centered driving (i.e. following the road edge on country roads with no center marking)

Traffic Sign Assist

In addition to conventionally sign posted speed limits, this recognizes overhead highway signs and construction signs. This includes warnings about running a stop sign and a red light.

Active Lane Keeping Assist

From speeds exceeding 37 mph, Active Lane Keeping Assist uses a camera to detect when road markings or road edges are crossed, helping the driver to avoid leaving the driving lane unintentionally. If there is a risk of collision with detected road users in the adjacent lane, for example overtaking or oncoming vehicles, the system can also intervene. Special features:

- Reaction to detected lane edges, i.e. a grass shoulder
- Particularly intuitive steering intervention
- Adjustment of sensitivity via a menu (early, medium, late)
- Supplementing the danger display with the aid of the active ambient lighting and DIGITAL LIGHT

Active Lane Change Assist

Active Lane Change Assist cooperatively assists the driver of the EQE when changing to the adjacent lane. A lane change to the right or left is only assisted if the sensors detect that the adjacent lane is separated from the present lane by broken lane markings, and no other vehicles are detected in the relevant danger zone. In conjunction with DIGITAL LIGHT, an intuitive lighting scenario is also created at night.

Active Emergency Stop Assist

Active Emergency Stop Assist brakes the vehicle to a standstill in its own lane if it recognizes that the driver is no longer responding to the traffic situation for a longer period. As part of the standard Active Lane Keeping Assist, this works even if Active Distance Assist DISTRONIC with Steering Assist is not switched on. Other features:

- Belt tensioning and braking impulse as a final signal of impending braking action
- Optional single lane change (at 50 mph, no obstacles in adjacent lane)

ATTENTION ASSIST

This system included as standard is able to recognize typical signs of drowsiness and driver inattention, and displays a warning message prompting them to take a break.

An ATTENTION ASSIST version with additional microsleep warning (only in conjunction with MBUX Hyperscreen) is new. It analyzes the driver's eyelid movements using a camera in the driver display. The microsleep warning function is already active from a speed of 12 mph.

Active Brake Assist with cross-traffic function

Active Brake Assist uses the on-board sensors to register whether there is a risk of collision with vehicles traveling ahead, crossing or oncoming. The system can give the driver a visual and audible warning if a collision appears imminent. If the driver's braking is too weak, it is also possible to support the driver by increasing the braking torque according to the situation and to initiate emergency braking if there is no reaction from the driver. Special features are the turning function when starting off (including crossing pedestrians when turning), the cross-traffic function on interurban routes (up to 75 mph) and the warning and braking for oncoming traffic.

Active Blind Spot Assist and exit warning function

Active Blind Spot Assist can give a visual warning - and if the indicators are operated, also an audible warning - of potential lateral collisions at speeds exceeding around 6 mph. If the driver ignores the warnings and still tries to change lane, the system can take corrective action by one-sided braking intervention at the last moment if the speed exceeds 18 mph. When the vehicle is stationary, the exit warning function can warn against exiting if a vehicle (or even a bicycle) is passing within the critical area. This function is available at standstill and up to three minutes after the start switch has been turned off. In addition, the hazard display is supplemented with the aid of Active Ambient Lighting (also with the vehicle exit warning).

Evasive Steering Assist

Evasive Steering Assist can assist the driver when seeking to avoid another road user detected by the system in a critical situation. In the new EQE, in addition to standing and crossing pedestrians, longitudinal pedestrians and vehicles as well as cyclists can also be taken into account. The speed range goes up to 68 mph, support is also provided on back roads.

Easy entry into confined parking spaces and narrow entrances

The new EQE: the parking assistants

The EQE comes with the Parking Package and reverse camera as standard. Thanks to powerful sensors that monitor the vehicle's surroundings, the parking systems can help the driver with maneuvering in many areas. The integration of Parking Assist in MBUX makes operation intuitive and fast. In conjunction with the Driving Assistance package, emergency braking functions provide special protection for other road users.

But the other parking systems also support the driver in a variety of ways:

... **Active Parking Assist** also uses the optional rear-axle steering and can thus enter the parking space with even greater agility. The calculation of the lanes (trajectories) is adjusted to this. And when things get really tight, it can make up to 12 moves. The process for maneuvering out of a parking space is completed at the latest when the vehicle is at an angle of 100° to the start position. Acceleration, steering, braking, gear changes and turn indicators are controlled automatically. The driver remains responsible and has the option to intervene at any time and correct or complete the parking maneuver.

... when driving past detected parking spaces, one press of the button on MBUX is sufficient to start the parking process. This is what is known as the **Quick Park function of** Active Parking Assist.

... the **Drive Away Assist** can warn the driver if a collision with detected objects could occur when starting off due to a mix-up of accelerator and brake pedal. At the same time, the speed is briefly limited in such cases if the danger of collision is detected.

... the **Parking Package with 360° camera** fuses the information from many sensors and cameras. This will allow more parking spaces to be identified and offered for automated parking, including spaces demarcated by lines (rather than vehicles). There are a total of 12 ultrasound sensors at the front and rear, a rear-view camera in the trunk lid, and three additional cameras in the outside mirrors and at the front.

... a real-time rendered vehicle model in the Parking Package with 360° camera displays status such as indicating or braking. Visualizes obstructions in the field of vision, i.e. open doors

... collision protection has been further extended to cross traffic. If the sensors detect other vehicles crossing during forward or reverse travel, the driver is first warned visually and audibly. The rear collision protection goes even further: if the driver does not react and the detected danger persists, the vehicle initiates autonomous emergency braking. The function, which is dependent on equipment, is called **Rear Cross-Traffic Alert**.

... the Active Parking Assist in the EQE also visualizes the distance to obstacles from the driver's perspective with the help of the **Active Ambient Lighting**. As before, the distance is also transmitted acoustically and displayed on the screen.

Accident protection is not a question of the powertrain concept

The new EQE: passive safety

The principles of Integral Safety, in particular accident safety, apply regardless of the platform. Like all other Mercedes-Benz models, the EQE therefore has a rigid passenger cell, special deformation zones and modern restraint systems.

The fact that the EQE is based on an all-electric architecture also opened up new design possibilities for its safety concept. It meant, for example, that a favorable location could be chosen for the installation of the battery, in a crash-protected area in the underbody. And because there is no large crankcase on board, the behavior in a frontal crash could be modeled even better. In addition to the standard crash tests, the car's performance in various additional load situations was verified and extensive component tests carried out at the Vehicle Safety Technology Centre (TFS). Internally the new body structure bears the designation "flat-floor concept".

Material concept: the backbone of accident safety

The body structure is predominantly made of steel. To reduce weight, the steel grades were selected to match the respective load. Hot-formed, ultra-high-strength steels are used in the critical areas. Furthermore, some components of the bodyshell are made of aluminum, for example the energy absorbers in the sill and the shock absorber strut brackets at the front and rear. Doors, hood, trunk lid and front fenders are also made of aluminum.

Frontal impact

The energy management of the EQE in a frontal impact meets several requirements: in the case of minor damage, an inexpensive repair is possible. And in the event of more serious accidents, the concept takes the protection of other road users into account in addition to self-protection, as is the case with every Mercedes-Benz model.

In the front area behind the plastic trim of the bumper and an absorber foam are removable crash boxes. In the case of minor accident severity, these can be replaced at low cost. A large-area crossmember connects the crash structures in such a way that the impact energy can also be dissipated to the other side of the vehicle in the event of a staggered accident. In a severe frontal impact, the energy is then mainly absorbed by the two longitudinal members, supplemented by an upper and a lower load path. The upper load path is supported by the damper leg bracket, the lower load path is formed by the integral carrier. This houses the lower suspension links, torsion bar, steering gear and front eATS.

Side impact

In principle, in a side impact only a very small deformation path is available. Highly stable structures in the EQE therefore serve to protect the occupants, but also the battery. The outer shell of the side wall assembly is formed by the one-piece outer paneling. The inner shells are partly made up of several components, with particularly large areas for the nodal points between the pillars, roof frame and side members according to the potential loads. For a side impact, the sills are designed in a shell construction made of steel with an aluminum insert profile that is specifically deformable to avoid critical damage to battery modules as far as possible. The lateral battery profiles additionally support the sill when supporting the front wheel. At the same time, they reinforce the floor structure and thus the passenger cell. The B-pillar is designed to provide protection for occupants in the event of a crash.

Rear impact

The EQE is also equipped for rear impact. Unlike the EQS, the EQE has a trunk lid, which allows the use of a crossmember from suspension strut tower to suspension strut tower. Flanged crossmembers with crash boxes under the bumper paneling help to distribute the energy of a one-sided impact to both rear side members. Thanks to the specific design of the structural components and the rear axle carrier, the requirements in terms of battery safety have been fulfilled.

Rollover

In a rollover it is particularly important that sufficient headroom is retained. At Mercedes-Benz, global requirements in terms of survival space are applied, which are checked by means of the roof-drop test, for example. Of course, these also apply to the EQE.

High-voltage (HV) system: automatic shut-off in accidents

The battery, high-voltage cables and other HV components have been designed and protected in such a way that they meet the high safety requirements of Mercedes-Benz in the event of an accident.

The multi-stage protection concept of the high-voltage (HV) system has already proven itself in the other Mercedes-EQ models. If a dangerous situation is detected, the HV system can be automatically switched off and disconnected from the battery. A distinction is made between a reversible and an irreversible shut-off. The reversible shut-off occurs in more minor accidents. Afterwards, reconnection of the high-voltage system is possible if an insulation measurement automatically carried out by the vehicle does not detect a fault. This means that slightly damaged vehicles can still be moved. Only in severe accidents, in which as a rule the vehicle is in any case no longer capable of being driven, is the high-voltage system irreversibly switched off. It can no longer be activated without repair. When switching off, it should be ensured that no injury-relevant residual electrical voltage is present in the high-voltage system outside the battery within a few seconds.

There are also shut-down points where emergency teams can deactivate the high-voltage system manually. In addition, the EQE has crash monitoring as standard during the charging process, to enable this to be terminated in the event of an accident.

Acoustic presence indicator: special sound as a warning for pedestrians

The electric car-specific innovations include an acoustic presence indicator (standard). This allows pedestrians to better perceive the EQE at low speeds. One sound generator sits weatherproof in the front right wheel arch and in the rear underbody respectively. A Mercedes-EQ-specific sound is produced up to approx. 19 mph vehicle speed. Initially it becomes louder with increasing speed. This change allows conclusions to be drawn about the driving status (braking/acceleration).

Above 12 mph the sound is then gradually reduced, since the vehicle can then be perceived by its tire and wind noise. If the speed drops from a higher speed back down to 19 mph, the sound is faded in again. When reversing, an intuitively recognizable interval tone sounds regardless of the speed.

Modern restraint systems

In addition to driver and front passenger airbags, a knee airbag on the driver's side is also standard. It protects the legs from contact with the steering column or instrument panel in a severe frontal crash. This is to prevent or mitigate injuries.

The standard window airbags can reduce the risk of head impact with the side window or penetrating objects. In the event of a serious side collision, the window airbag on the side of the impact extends from the A- to the C-pillar like a curtain over the front and rear side windows. If a rollover is detected, the window airbags can be activated on both sides.

Side airbags in the rear are available as optional equipment. They can supplement the effect of the standard windowbags on the outer rear seats.

The EQE has i-Size child seat attachments as standard on the two outer rear seats. With two anchors each between the seat back and the seat cushion, corresponding child seats are installed particularly quickly and securely. Top tether attachment points behind the rear head restraints provide additional support.

PRE-SAFE®: precautionary preparation for an accident

The PRE-SAFE® preventive occupant protection system is also available for the EQE. Together with the familiar precautionary measures in the event of a potential frontal and rear-end crash, PRE-SAFE® Impulse Side (available in conjunction with the Driving Assistance package Plus) forms a kind of virtual crumple zone that extends around the vehicle.

As only a limited crumple zone is available in a side impact, PRE-SAFE® Impulse Side (availability depending on selected equipment) can move the affected driver or front passenger away from the danger even before the crash as soon as the system detects that a side collision is immediately imminent. For this purpose, air chambers in the side bolsters of the front seat backrest are inflated in fractions of a second.

High level of protection against high voltages

The new EQE under the magnifying glass: high-voltage safety

To avoid electric shocks and high-energy short circuits, Mercedes-Benz has developed a multi-stage high-voltage safety concept comprising seven key elements. Alongside the battery, part of the high-voltage system includes all components with a voltage level higher than 48 volts. The protection concept provides a high degree of safety when driving, both during and after a crash.

1. Separate positive and negative lines
   A conventional 12 V on-board electrical system uses the vehicle body as a negative terminal ("earth"). The high-voltage system, on the other hand, is completely isolated from the vehicle structure: all HV components are connected to each other with both a positive and a negative line. The HV lines can be identified by means of their orange sheathing. Even if damage should occur, there is no danger of an electric shock or short circuit, since even in this case there is no closed electric circuit.

2. Self-monitoring HV system
   The complete HV system, especially the battery, continuously monitors itself. By means of continual temperature, insulation and short circuit measurements, fault currents are detected and displayed at an early stage. What is known as an interlock switching circuit incorporates all of the HV components and monitors whether all of the components are connected correctly. Errors in the system are displayed and if there is any doubt the HV system cannot be started, or is even automatically switched off.

3. Protection zones
   Based on more than 50 years of accident research by Mercedes-Benz involving thousands of investigated accidents, a protection zone concept has been specially developed for electric vehicles. As part of this the vehicle is divided into three areas.

   3.1. Outer zone: in the case of minor damage, the HV system is mostly unaffected and therefore does not need to be automatically switched off. That's because the high-voltage components are either located outside of the area affected by such minor damage or are safeguarded by additional measures (see 4. Inherent stability).
   3.2. Inner zone: if the vehicle is affected by more severe accident damage, the HV system is automatically switched off (see also point 6): in an accident of such severity the airbags are generally deployed. Depending on the severity of the accident and degree of damage, the HV system is switched off reversibly or irreversibly. Either the customer can therefore switch it back on again, or activation is only possible again after replacing some parts.
   3.3. Core zone: in the third vehicle area, usually no or only slight deformation occurs in crash tests. This protection area is suitable for accommodating the HV battery or particularly sensitive components, for example.

4. Inherent stability
   In the case of HV components in the outer deformation areas, rigid housings in particular make a contribution towards protecting components. Alternatively, in addition to the inherent stability, the level of protection can be further increased by deflecting surfaces or protective panels, for example. For this, during vehicle development, damage patterns and load levels are derived from crash simulations and crash tests. Affected HV components must also be protected against contact after the crash. The requirements are particularly high for the mechanical properties of the HV batteries. Here, alongside standard crash tests, further load cases are also used to provide even further cover of actual accident conditions.

5. High-voltage line protection
   All HV components are connected to each other with HV lines. HV cables are flexible lines which in some cases can also be routed inside structural areas. Although in any event this usually involves two separate lines, they are additionally covered in particularly sensitive locations in order to prevent a loss of insulation if crushed.

6. Automatic crash shut-off of the HV system
   As soon as a specific accident severity is detected in an impact, the HV system is switched off. As part of this, relays are opened in the HV battery which prevent further power from being fed into the HV system. Components which are connected to the battery are discharged in just a few seconds such that only a non-critical voltage level remains present.

   In less severe accidents, a reversible shut-off only takes place preventively by means of a simple shut-down indication. When the driver tries to re-start the vehicle, an insulation check automatically takes place prior to switching back on. If no insulation error is detected as part of this, switching back on is permitted. In severe accidents, after which in any event it is no longer possible to continue driving, the HV system is irreversibly switched off through the ignition of a pyrofuse. The vehicle can then no longer be started.
   A particular highlight is the "stationary crash detection": when switched off while charging, the EQE is also able to detect a severe impact and quickly interrupt the charging process. This helps to achieve a particularly high level of protection for the high-voltage system.

7. Manual shut-off option for emergency services
   For the emergency services the vehicles feature additional shut-off options for the HV system, what are known as rescue separation points. The installation locations are recorded in the rescue datasheets. For towing away, too, for example, a manual shut-off is useful when the vehicle is only slightly damaged and it cannot be clearly determined whether an automatic crash shut-off has occurred.

Protection against water
With the EQE, all HV components are protected with protection class IP 6K9K. This protection class means that the components are completely sealed against dust as well as protected against water when cleaned with high pressure/steam jets.

Special seals help to protect the HV components against water penetration. In flood situations, the components may be switched off by appropriate overcurrent protection measures, such as fuses. An electrical hazard can be ruled out as the HV voltages do not become accessible to the user despite water penetration and the HV system is deactivated immediately.

Digital technologies and maximum flexibility

The new EQE: the production

The new EQE executive sedan is produced at the Mercedes-Benz plant in Bremen (Germany). After Bremen, the EQE will in future also be produced at BBAC's German-Chinese joint venture plant in Beijing.

The all-electric EQE executive sedan will also be integrated into the ongoing series production of the plants. At the Mercedes-Benz plant in Bremen, the EQE is built on the same line as the C-Class, the GLC, the GLC Coupe and the all-electric EQC.

Maximum flexibility is the decisive keyword: for example, a new bodyshell system makes it possible to flexibly map and manufacture different model and drive variants. This is already in use at the Bremen plant, and is to be rolled out successively at Mercedes-Benz plants worldwide.

The MO360 digital production ecosystem ensures the best possible transparency in the global production network: This makes complex vehicle production transparent and efficient with the help of software applications linked by common interfaces and uniform user interfaces.

From 2022, all Mercedes-Benz-owned passenger car and van plants worldwide will produce on a CO_2-neutral basis.

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About Mercedes Benz

Mercedes-Benz USA (MBUSA), headquartered in Atlanta, is responsible for the distribution, marketing and customer service for all Mercedes-Benz products in the United States. MBUSA offers drivers the most diverse lineup in the luxury segment with 15 model lines ranging from the sporty A-Class Sedan to the flagship S-Class and the Mercedes-AMG GT R. MBUSA is also responsible for Mercedes-Benz Vans in the U.S. More information on MBUSA and its products can be found at www.mbusa.com and www.mbvans.com.

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