(combined fuel consumption 1.6 - 1.4 l/100 km, combined CO_2 emissions 36 - 32 g/km, combined power consumption 15.3 - 14.8 kWh/100 km) [1]

[1] The stated figures are the measured "NEDC CO_2 figures" in accordance with Art. 2 No. 1 Implementing Regulation (EU) 2017/1153. The fuel consumption figures were calculated based on these figures. The range and the power consumption have been determined on the basis of Regulation (EC) No. 692/2008. A different value is applied in accordance with EmoG. A higher figure may apply as the basis for calculating the motor vehicle tax.

360° Environmental Check Mercedes-Benz A 250 e Plug-in Hybrid

Mercedes-Benz
The best or nothing.

Mercedes-Benz has long recognised the importance of vehicle interiors optimized for allergy sufferers. Interior emissions have been measured since 1992. Today designers and developers can make their choice from a database of several thousand interior materials that have been approved by the material department. The laboratory test with the complete vehicle in a special test chamber lasts one week. Like all new model series, the A-Class bears the ECARF (European Centre for Allergy Research Foundation) seal of quality.

360° environmental check A 250 e plug-in hybrid

The new Mercedes-Benz A-Class plug-in hybrid A 250 e (combined fuel consumption 1.6 - 1.4 l/100 km, combined CO_2 emissions 36 - 32 g/km, combined power consumption 15.3 - 14.8 kWh/100 km)[1] is a further, important milestone on the road to emission-free driving. Mercedes Benz Cars is pushing ahead with the development of its plug-in hybrids under the EQ Power label.

On the road to purely electric mobility, plug-in hybrids represent what is perhaps the key bridging technology. With its EQ Power models, Mercedes-Benz is presenting an efficient drivetrain package which is already in its third generation, marking a further step towards CO_2-neutral mobility. By 2030 we aim to have electric models make up more than half of our car sales – that includes all-electric cars and plug-in hybrids. At the same time, we are continuing our efforts to make the production of our vehicles CO_2-neutral. All of our European plants will follow by 2022.

We want to inspire our customers to charge their vehicles with electricity from renewable energy sources. With Mercedes me Charge, for example, we enable drivers to conveniently charge their cars at various public charging stations in Europe, wherever possible with energy from renewable sources.

But the transformation to a sustainable mobility of the future will only succeed if the auto industry, energy suppliers and policy makers are working hand in hand. Through our joint venture IONITY, we are working together with several other automakers to establish a powerful fast-charging network for electric vehicles in Europe. IONITY is pursuing the goal of also being able to guarantee a consistent charging network for long-distance travel on the most important pan-European highways in order to accelerate the establishment of electric mobility on the market. Over 200 IONITY fast-charging stations were in operation at the beginning of 2020, and many more are under construction. Each IONITY fast-charging station has several charging points per charging park. By the end of 2020, thousands of charging points will enable customers to charge vehicles of different brands and with different electrical outputs. All of the charging points will be driven by 100 percent renewable energy.

In this brochure we briefly summarize the results of the Mercedes-Benz A-Class plug-in hybrid A 250 e LCA for you.

By the way: this brochure is available for download from http://www.mercedes-benz.com

[1] The stated figures are the measured "NEDC CO_2 figures" in accordance with Art. 2 No. 1 Implementing Regulation (EU) 2017/1153. The fuel consumption figures were calculated based on these figures. The range and the power consumption have been determined on the basis of Regulation (EC) No. 692/2008. A different value is applied in accordance with EmoG. A higher figure may apply as the basis for calculating the motor vehicle tax.
Further information on the official fuel consumption and the official specific CO_2 emissions of new passenger cars can be found in the publication "Leitfaden über den Kraftstoffverbrauch, die CO_2-Emissionen und den Stromverbrauch neuer Personenkraftwagen" [Guide to fuel consumption, CO_2 emissions and electrical consumption of new passenger cars] which is available free of charge at all sales outlets and from Deutsche Automobil Treuhand GmbH at www.dat.de.

Mercedes-Benz A 250 e

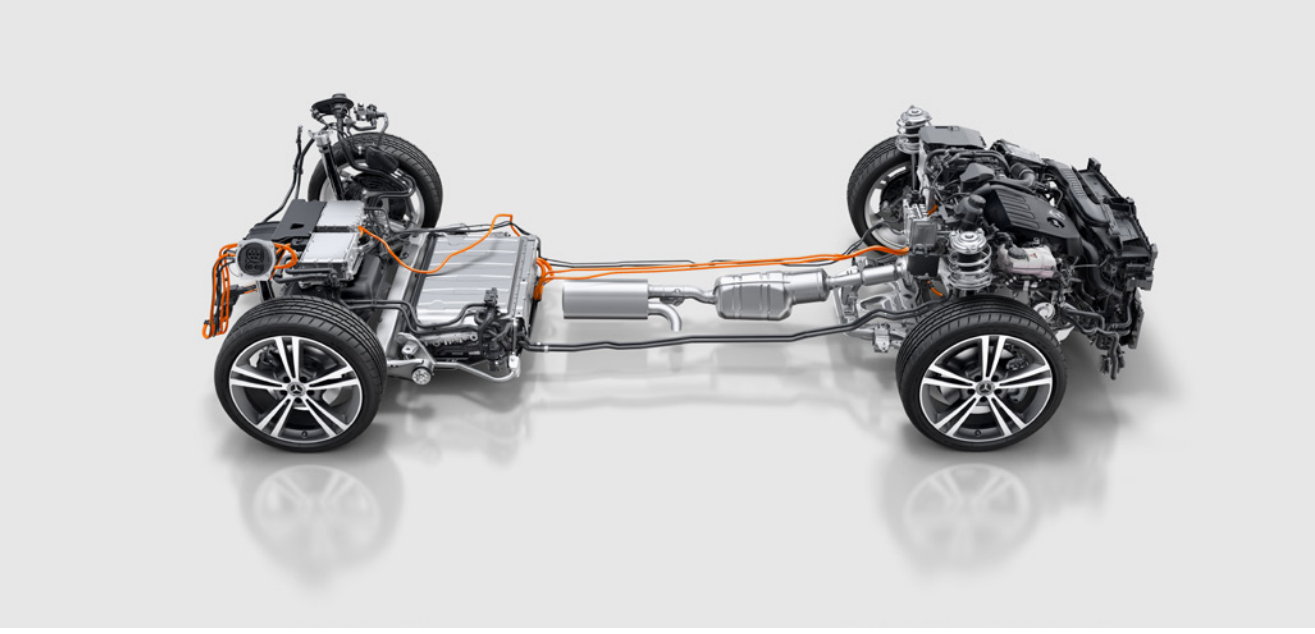
Plug-in hybrid technology for compact models

The vehicles belonging to Mercedes-Benz's compact car family feature transversely mounted engines. A compact hybrid traction head has been developed for the 8G-DCT dual clutch transmission which follows the same technical principles as the corresponding component on the vehicles with a longitudinally installed engine.

The electric machine works as a permanently excited synchronous machine. Its stator is an integral component of the traction head housing, the rotor of the electric motor comprises the low-loss separator clutch running in the oil bath. On-demand stator and rotor cooling makes it possible to call on both the peak and continuous performance of the electric machine without any compromise. The structure of the hybrid components enables Mercedes-Benz to do without a classic 12 V starter, as only the electric machine is used for starting and boosting the combustion engine. As well as efficiency, the compact drive unit brings a generous portion of driving pleasure and suitability for everyday use. As the EQ Power alliance the electric machine and the 1.33-litre four-cylinder engine generate 160 kW (218 hp) and develop an overall maximum torque of 450 Nm.
The hallmark characteristic of the electric machine, namely full torque from a standstill, ensures that the compact plug-in hybrids react immediately to the accelerator pedal. The performance values are correspondingly impressive.

An innovative exhaust system makes clever packaging possible: rather than extending to the end of the vehicle, the exhaust ends in a centrally positioned outlet under the vehicle floor, with the rear silencer housed in the transmission tunnel. Integrating the fuel tank into the axle installation space creates room beneath the rear seats for the high-voltage battery.

The A-Class with plug-in hybrid drive is being produced on the same line at the Mercedes-Benz Rastatt plant as models with conventional drive systems. The production of vehicles with different drive types can therefore be adapted flexibly and efficiently.



Lithium-Ion Battery

The latest battery generation with a high energy density

The lithium-ion battery of the Mercedes-Benz A 250 e is positioned beneath the rear seats. The battery is produced in Germany, by the wholly-owned Daimler subsidiary Deutsche ACCUMOTIVE in Kamenz/Saxony.

A lithium-ion battery with an overall capacity of approx. 15.6 kWh serves as an energy storage unit for the electrical system. For the third-generation Mercedes-Benz plug-in hybrids known as EQ Power the company uses batteries with advanced cellular chemistry. The leap from lithium-iron-phosphate (LiFePo) to lithium-nickel-manganese-cobalt (Li-NMC) made it possible for the cell capacity to be increased from 22 to 37 Ah.

As a result it was possible to give the battery packs a more compact design, with advantages for the boot capacity and space available for the occupants.

The battery can be charged with alternating or direct current. The vehicle's connection for this, practically the electric fuel cap, is located in the rear area of the right-hand side wall. The compact plug-in hybrids can be charged via this at a 7.4 kW wallbox with alternating current (AC) within 1 h 45 min from 10-100 percent SoC (State of Charge).

With the faster direct current (DC) the charging time reduces to just 25 minutes from 10-80 percent SoC.

The water-cooled batteries weighing approximately 150 kilograms are supplied by the fully owned Daimler subsidiary Deutsche ACCUMOTIVE.

The facts

The Mercedes-Benz A 250 e 360° environmental check

Early in the development stage of a new model, Mercedes-Benz starts looking at environmental performance over the car's entire life cycle. On the following pages you can read about how the new A 250 e fares in the key areas of the comprehensive Life Cycle Assessment (LCA): consumption of resources and emissions.

[1] The stated figures are the measured "NEDC CO_2 figures" in accordance with Art. 2 No. 1 Implementing Regulation (EU) 2017/1153. The fuel consumption figures were calculated based on these figures. The range and the power consumption have been determined on the basis of Regulation (EC) No. 692/2008. A different value is applied in accordance with EmoG. A higher figure may apply as the basis for calculating the motor vehicle tax.
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Environmentally friendly third-generation plug-in hybrid drive:
Locally emission-free driving while electrical operation with higher vehicle range.

Economical (NEDC values)[1]:
Combined fuel consumption 1.6 - 1.4 l/100 km,
Combined power consumption 15.3 - 14.8 kWh/100 km,
Combined CO_2 emissions: 36 - 32 g/km,
71 - 78 kilometers battery-electric range.

Resource-efficient:
118 components from less resource consuming materials.

The resources: what is needed to produce a car

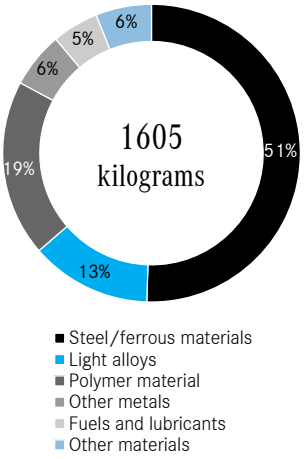
Achieve more with less

When it comes to the overall life cycle assessment, the A 250 e benefits from partially locally emission-free operation and the high efficiency of the electric powertrain.

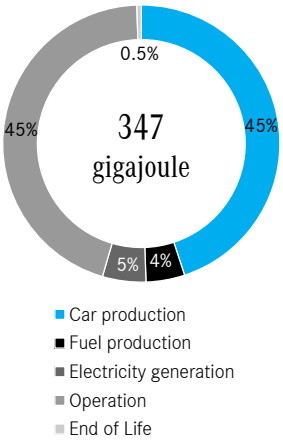
Material resources

In production, the drive components specific to the A 250 e plug-in hybrid require a greater use of material and energy resources. The importance of the car production process therefore increases compared to conventional combustion engines.

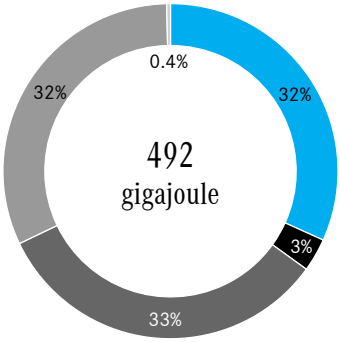
Mercedes-Benz A 250 e



Electricity from hydropower



EU electricity mix



Energy resources

However, a realistic picture only emerges when the entire life cycle (material manufacturing, production, operation for 160,000 kilometres and recycling) is examined. This is because during its operating phase, the A 250 e benefits from the high efficiency of the electric powertrain.

For the analysis of the operation phase, two sources for high-voltage battery external charging were examined.

The greatest energy efficiency can be achieved by the use of hydroelectric power. Over the A 250 e entire life cycle the analysis shows a primary energy requirement of 347 GJ, of which 245 GJ come from fossil and 102 GJ from renewable resources.

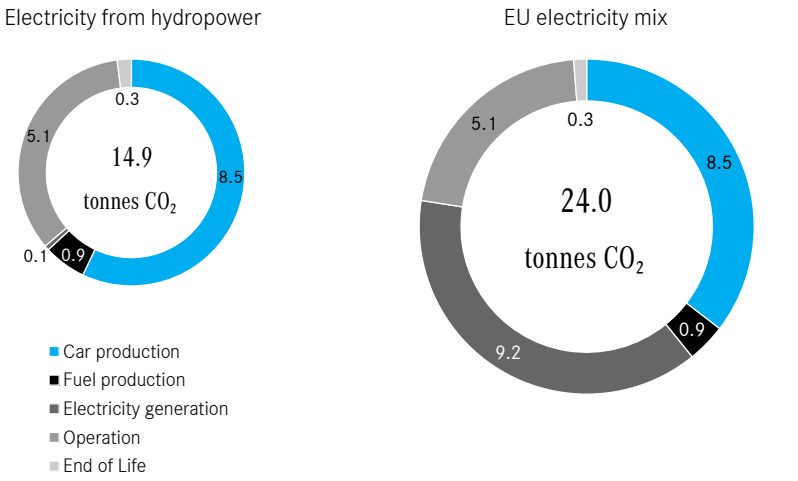
If the EU electricity mix is used for the external charging of the high-voltage battery, the proportion of the primary energy requirement for electricity generation increases visibly. Over the vehicle's entire life cycle, the primary energy requirement amounts to 492 GJ.

The materials used are not lost when this life cycle comes to an end. The valuable materials contained in the high-voltage battery can for the most part be retrieved by specific recycling. All in all, a recovery rate of 95% is achieved for the A 250 e.

The emissions: the carbon footprint over the life cycle

It depends on the electricity mix

It is of decisive importance for the CO_2 balance, whether the power for the external charging of the A 250 e battery is produced from the renewable sources wind or hydro power, or whether the European power mix forms the basis.



Values are rounded

CO_2 emissions

Analysis of the emissions during the individual phases of the life cycle makes it clear:

As more and more vehicles are turning to electric power, two further factors are becoming increasingly important, the production of the high-voltage battery and the generation of the electricity for the external charching of the battery.

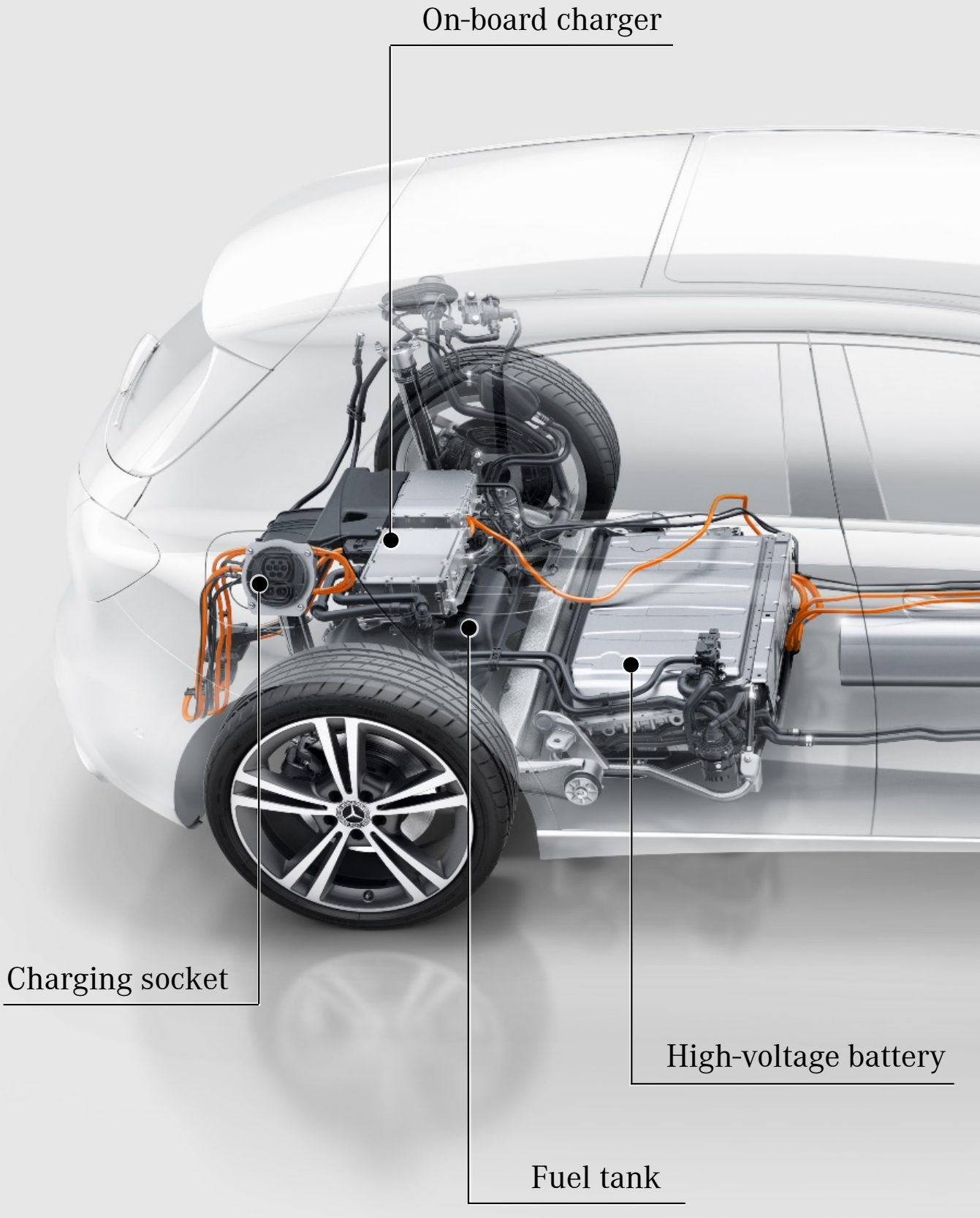
Approximately almost a quarter of the CO_2 emissions generated during production of the A 250 e stem from the lithium-ion high-voltage battery and the battery periphery. The impact of the charging current also makes itself felt: if it is produced from renewable sources, for example using hydroelectric power, the CO_2 emissions can be reduced significantly by comparison with the EU electricity mix.

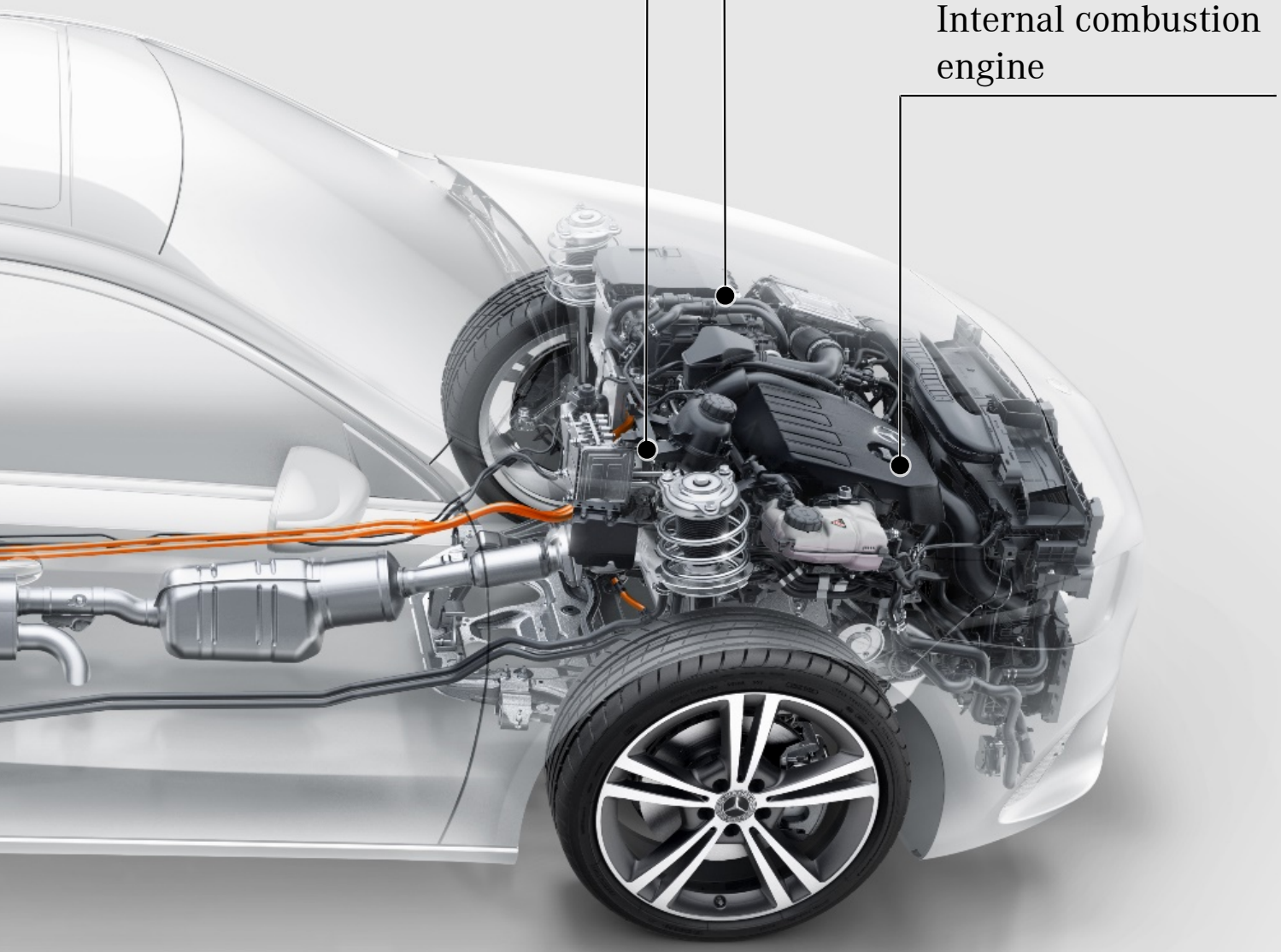
If the European electricity mix is used for external battery charging, the A 250 e emits a total of 24.0 tonnes of CO_2 over the entire life cycle.

The use of power completely generated from renewable resources even makes a reduction to 14.9 tonnes of CO_2 possible.

X-ray view Mercedes-Benz A 250 e

The most important drive components of the A 250 e




8F-DCT transmission with hybrid traction unit (incl. electric machine)
Power electronics & DC/DC converter
Internal combustion engine

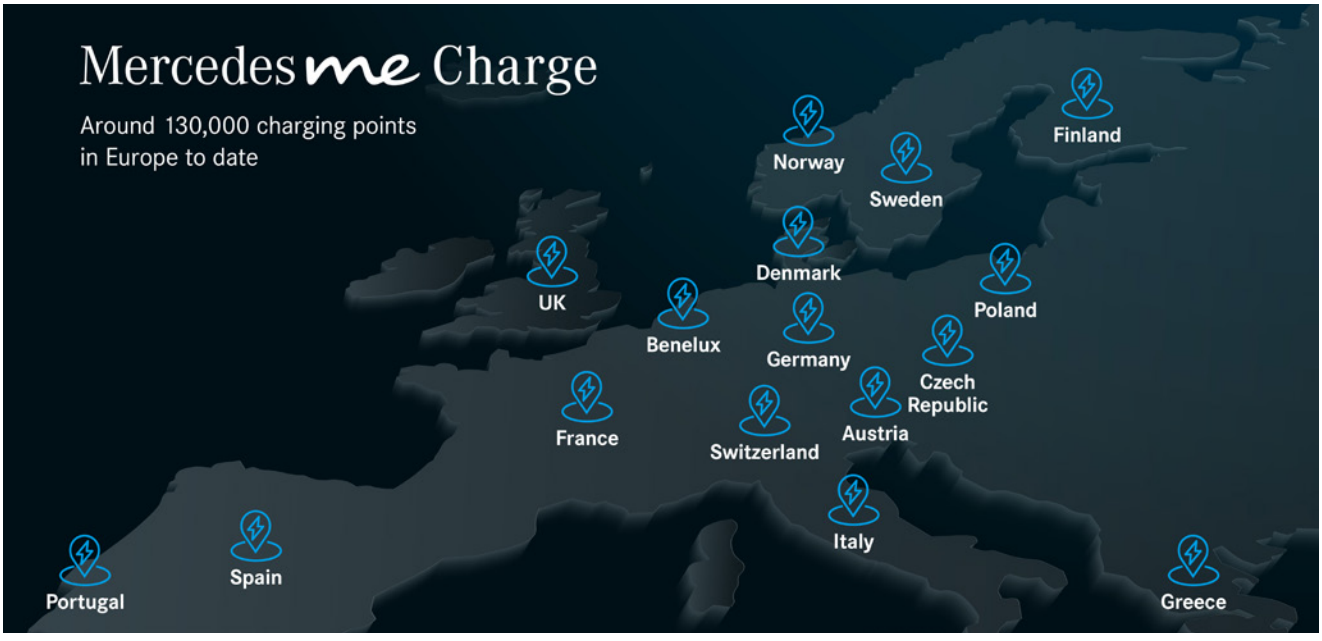
The charging

Mercedes me Charge

Via Mercedes me Charge, drivers of a plug-in hybrid model can optionally obtain access to one of the world's largest charging networks, with over 300 different operators in Europe alone (municipalities, car parks, motorways, shopping centres, etc.).

Thanks to navigation, Mercedes-Benz customers can find these stations easily and can gain convenient access to the charging stations via the Mercedes me Charge card, the Mercedes me app or directly from the car. No separate contracts are necessary for this: apart from simple authentication, customers benefit from an integrated payment function with simple billing after they have registered their payment method once. Each charging procedure is booked automatically. The individual charging processes are clearly listed in a monthly invoice. Mercedes me Charge also allows customers to access the fast-charging stations operated by the pan-European IONITY network. The network's short charging times make for a pleasant journey, especially over long distances. The IONITY charging network is set to operate with 100 percent renewable energy in 24 European countries by the end of 2020. IONITY was established in November 2017 as a joint venture between the BMW Group, Mercedes-Benz AG, Ford Motor Company, and the Volkswagen Group (with Audi and Porsche).

So that the distances between the individual charging processes are as long and the charging time as short as possible, the vehicle electronics of the EQ Power models support the driver in efficient driving with an intelligent and route-based operating strategy. It recommends the electric driving mode where it makes best sense in each case, taking into account, for example, navigation data, topography, speed limits and the traffic conditions for the entire planned route. What is known as the ECO Assist supports the driver as a type of coach and helps save electricity and fuel. If the ECO Assist's coach is systematically followed, consumption can be cut by up to five percent compared with a normal driving profile.



Usage of materials A-Class

Responsible resource utilisation

Closed-loop material cycles and the usage of renewable raw materials are the key levers for responsible resource utilisation.

Manufacturing vehicles requires a high degree of material usage. For this reason there is a developmental focus on further reducing the use of resources and the environmental impacts of the materials deployed. To this end, the use of less resource consuming materials such as recycled plastics and renewable raw materials in the vehicles is constantly being extended.

With the Dinamica® material, high-quality secondary raw material is also now used in the interior of the A-Class.

Dinamica® is a microfiber made of recycled polyester and water-borne polyurethane. The recycled polyester contained in Dinamica® derives e.g. from textiles remnants and PET bottles. Dinamica® has a suede leather optic and haptic and is used in the interior as seat cover. The completely redeveloped structure of the instrument panel in the A-Class equally contributes to conserving resources: the optimisation of the production process realised on account of the new structure has resulted in a clear reduction in press remnants.

In the A-Class a total of 118 components plus small parts such as push buttons, plastic nuts and cable fasteners with a total weight of 58.3 kilograms can be produced partially from less resource consuming materials.

Facts and figures

Would you have known that ...

... customers will be able to experience the advantages of the plug-in hybrid technology by the end of 2020 in more than 20 different model variants?

Mercedes-Benz will roll out this pioneering technology across the entire range – from the A- to the S-Class, from the GLA to the GLE the combustion engines are being given electric supporters.

... a purely electric range of 50 kilometres is sufficient for 90 percent of all journeys?

Mercedes-Benz Research has used methods such as the EQ Ready app to determine just how big the distances are which are covered on average by e-mobilists. The proportion of longer trips is vanishingly small – more than 90 percent of all journeys are shorter than 100 kilometres and most of the journeys are shorter than 400 kilometres. The third-generation plug-in hybrids are an ideal fit for these results.

... EQ is the new Mercedes-Benz brand for electromobility?

The name stands for “Electric Intelligence” and is derived from the brand values of “Emotion and Intelligence”. The goal has been clearly defined: Within a very short time, EQ is to become one of the most desirable technology brands in the automobile sector. In this context, excitement and fascination are just as important as the message about holistic solutions that provide maximum customer benefit with state-of-the-art technologies.

... 1995 the life cycle assessment of the first A-Class started?

The study “Comprehensive life cycle assessment of the Mercedes-Benz A-Class” represented the first time that a Mercedes-Benz vehicle was analyzed in detail over its entire life cycle. Since then, the life cycle assessment tool has become an integral part of the Mercedes-Benz development process.

... since 2005, Mercedes Benz has been publishing product-related environmental information as a result of environmentally compatible product development, verified by TÜV SÜD environmental verifiers taking into account ISO 14001, ISO TR 14062 and ISO 14006?

Reducing the environmental impact of a vehicle’s emissions and resource consumption throughout its life cycle is crucial to improving its environmental performance. The environmental burden of a product is already largely determined in the early development phase. In Development at Mercedes-Benz, a “DfE” team ensures compliance with the established environmental objectives. This team comprises specialists from a wide range of fields, e.g. life cycle assessment, dismantling and recycling planning, materials and process engineering, as well as design and production.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The Certification Body
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certifies that
Daimler AG
Mercedes-Benz Sindelfingen
Béla-Barényi-Straße 1
71063 Sindelfingen
Germany
has established and applies
an Environmental Management System
with particular focus on eco design for
Development of passenger vehicles.
A specific audit, Order No. 70014947,
revealed, that the entire product life cycle is considered
in a multidisciplinary approach when integrating environmental aspects
in product design and development
and that the results are verified by means of Life Cycle Assessments.
Thereby the requirements according to
ISO 14006:2011
ISO/TR 14062:2002
are fulfilled.
This certificate is valid only in combination with the
ISO 14001 certificate, registration no.: 12 104 13407 TMS
from 2018-12-27 until 2021-12-06.
Certificate Registration No.: 12 771 13407 TMS.
Product Compliance Management
Munich, 2019-01-02
t Service GmbH • Zertifizierungsstelle • Ridlerstraße 65 • 80339 München • Germany
www.tuev-sued.de/certificate-validity-check
TÜV®

Mercedes-Benz has published product-related environmental information since 2005, reflecting the results of environmentally compatible product development and verified by environmental assessors at TÜV SÜD. The brochures are made available to the wider public as the „Lifecycle“ series. They can be downloaded at www.mercedes-benz.com.

As of: May 2020

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Mercedes-Benz – A Daimler Brand