Life cycle COMPACT

360° ENVIRONMENTAL CHECK

The new GLE 500 e 4MATIC

- **Environmentally friendly:**
  up to 58 percent lower CO_2 emissions
- **Economical:**
  up to 30 kilometres on electric power alone,
  NEDC consumption just 3.3 litres/100 km
- **Resource-efficient:**
  37 components made from high-quality
  recycled plastics

Mercedes-Benz

Mercedes-Benz has long recognised the importance of vehicle interiors optimised 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 new GLE bears the ECARF (European Centre for Allergy Research Foundation) seal of quality.

“We improve the environmental performance over the entire life cycle of a car”

One of our six environmental and energy guidelines states: “We strive to develop products that are highly responsible to the environment in their respective market segments.” To achieve this goal we have to incorporate environmental protection into products from the very start to a certain extent.

The earlier this “Design for Environment” approach is integrated into the development process, the greater the benefits in terms of minimised environmental impact and cost.

It is likewise crucial to reduce the environmental impact caused by emissions and consumption of resources during the entire life cycle. This comprehensive and exhaustive Life Cycle Assessment (LCA) we call ‘360° environmental check’. It scrutinises all environmentally relevant aspects of a car’s life: from manufacture of the raw materials to production, vehicle operation and then recycling at the end of the vehicle’s life – a long way off in the case of a new Mercedes-Benz.

As well as documenting every last detail of this LCA in-house throughout the entire life cycle, we have the results checked and confirmed by independent assessors from the TÜV Süd inspection authority. Only then does a car receive its Environmental Certificate.

This brochure briefly summarises the results of the GLE 500 e 4MATIC * model’s LCA for you. Incidentally, the GLE plug-in hybrid is a good example of why a comprehensive assessment is necessary to gauge the overall environmental impact. Because the naturally higher use of resources in production is more than compensated for by the clearly superior environmental performance of the car during operation.

If this compact brochure has aroused your interest in the subject, I would recommend you take a look at the detailed documentation of the GLE model’s LCA. The “Lifecycle” brochure is available for download from http://www.mercedes-benz.com.

Kind regards.
Yours,

Anke Kleinschmit
Chief Environmental Officer of the Daimler Group

* Fuel consumption GLE 500 e 4MATIC with automatic transmission (combined): 3,7-3,3 l/100km, 18-16,7 kWh/100km; CO_2-emissions (combined): 84-78 g/km.

Efficiency meets all-wheel-drive performance

For the first time in its SUV history, Mercedes-Benz is offering a plug-in hybrid model, the GLE 500 e 4MATIC, which combines maximum energy efficiency with outstanding performance. This talented all-rounder will even best the already low fuel consumption figures of the efficiency champion, the GLE 250 d* with its four-cylinder diesel engine, while delivering the performance of a V8 model.

The new GLE 500 e 4MATIC with plug-in hybrid drive boasts a complex AWD drive train that ensures supreme performance, both on the road and off it. It comprises a BlueDIRECT V6 direct-injection petrol engine with 245 kW (333 hp) and a hybrid module with 85 kW (116 hp) of electric power. The system's peak torque is a mighty 650 Newton metres, while the system's overall output is 325 kW (442 hp). This enables the full-size SUV to accelerate from 0 to 100 km/h in 5.3 seconds and reach a top speed of 245 km/h. In view of such dynamic performance, the certified standard consumption figures are all the more impressive. The GLE 500 e 4MATIC burns a mere 3.7–3.3 litres for every 100 km, equating to CO_2 emissions of 84–78 g/km. This together with an electric power consumption of 16.7 kWh per 100 kilometres makes the versatile SUV one of the most efficient models in its market segment. In addition to impressive acceleration thanks to the boost function, the highly sophisticated system drive also offers all-electric driving for distances of up to 30 kilometres. The all-electric top speed of 130 km/h corresponds to the recommended speed on German autobahns.

The compact hybrid module has been completely integrated into the 7G-TRONIC PLUS seven-speed automatic transmission. The electrical energy is stored in a lithium-ion battery with an energy content of 8.7 kWh,

Outstanding ergonomics and brilliant infotainment in the GLE 500 e 4MATIC plug-in hybrid model.

* Fuel consumption GLE 250 d with automatic transmission (combined): 5.6-5.4 l/100km; CO_2-emissions (combined): 146-140 g/km.

Intelligent operating strategies enable the Mercedes-Benz GLE 500 e 4MATIC to achieve the lowest electric consumption in its class. The all-wheel-drive SUV model is capable of up to 30 kilometres of emission-free driving.

which can be recharged using public charging stations, the wallbox charger at home or at a conventional 220 volt power outlet. The charging time using the wallbox charger or the charging station is around two hours.

The best strategy for efficient driving has always been anticipatory driving without unnecessary braking and accelerating. This is even more important in a hybrid model: this is because braking manoeuvres serve not only to deliver deceleration, but are also used to recover kinetic energy. The route and traffic likewise bear an influence on the most efficient way of charging and discharging the high-voltage battery. For this reason the intelligent drive system management aids the driver with specific control strategies in adopting the most efficient driving style.

Additional comfort functions such as pre-entry climate control in both summer and winter make driving in the GLE an even more enjoyable experience. The advantages of the new GLE furthermore include optimum on-road and off-road handling, outstanding spaciousness and high levels of active and passive safety.

The extensive safety equipment of the new GLE is extended with new assistance systems such as Crosswind Assist or COLLISION PREVENTION ASSIST PLUS. The impressive list of standard anticipatory safety features can be added to. There is the Driving Assistance package Plus, for example, which includes DISTRONIC PLUS with Steering Assist and Stop&Go Pilot, PRE-SAFE® Brake with pedestrian detection, BAS PLUS with Cross-Traffic Assist, the Active Blind Spot Assist and Lane Keeping Assist systems, plus PRE-SAFE® PLUS.

In addition to the three-point seat belts with pyrotechnical belt tensioning and belt force limiters for driver, front passenger and the passengers in the two outer rear seats, numerous airbags serve to protect the vehicle's occupants in an accident. These include pelvisbags for the driver and front passenger, a newly developed windowbag, sidebags for the outer rear seats and a kneebag for the driver.

Besides the intelligent operating strategies, the GLE 500 e 4MATIC also offers an impressive array of comfort features. For instance, the driver is able to remotely activate the interior climate control in advance from a smartphone, meaning that the passenger compartment can be e.g. warmed to a pleasant temperature ready for the start of the journey in winter.

Lifecycle COMPACT
Ten years ago, the S-Class became the first-ever vehicle to be awarded the Environmental Certificate from TÜV Süd. The “Life Cycle” brochure has been presenting the environmental certificates since 2009. The “Lifecycle COMPACT” edition now also being released is brand new. This compact overview illustrates the high level of environmental compatibility of Mercedes-Benz vehicles during the entire lifecycle in an easy-to-understand way, and also gets right to the heart of Daimler’s environmental commitment.

The facts

The Mercedes-Benz GLE 500 e 4MATIC in the 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 GLE 500 e 4MATIC fares in the key areas of the comprehensive Life Cycle Assessment: consumption of resources and emissions.

Achieve more with less

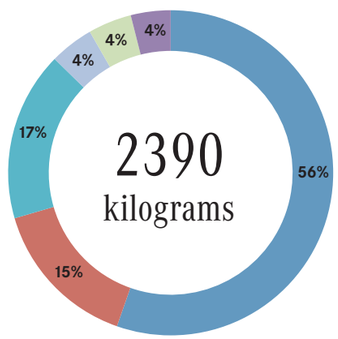
The GLE 500 e 4MATIC can be noted for its low consumption of resources, low energy requirements and good recycling characteristics. A comparison with the GLE 500 4MATIC* highlights the superiority of the plug-in hybrid technology.

*Fuel consumption GLE 500 4MATIC with automatic transmission (combined): 11.5-11.0 l/100km; CO_2-emissions (combined): 269-258 g/km.

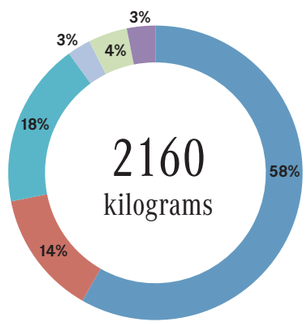
Material resources

- Steel/ferrous materials
- Light alloys
- Polymer materials
- Other metals
- Service fluids
- Other materials

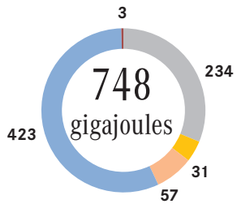
Due to the hybrid-specific components, the use of material resources is higher in the GLE 500 e 4MATIC than in the GLE 500 4MATIC. However, the materials used are not lost, thanks to the high recovery rate of 95 percent.



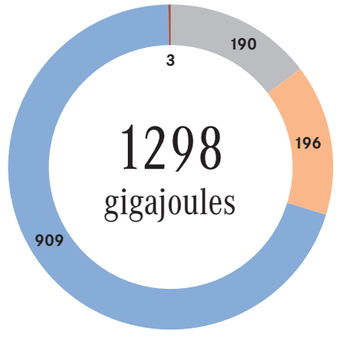
Mercedes-Benz GLE 500 e 4MATIC



Mercedes-Benz GLE 500 4MATIC



Mercedes-Benz GLE 500 e 4MATIC
(hydroelectricity)



Mercedes-Benz GLE 500 4MATIC

Energy resources

- Car production
- Electricity generation
- Fuel production
- Operation
- End of life

When the individual life cycle phases are considered in detail, the energy required to produce the vehicle is initially higher for the plug-in hybrid. In the operating phase, however, energy requirements are reduced significantly thanks to its excellent efficiency.

Comparative analysis of the energy and material resources which are used for the GLE 500 e 4MATIC and GLE 500 4MATIC shows that a realistic picture only emerges when the entire life cycle (material manufacturing, production, operation for 250,000 kilometres and recycling) is examined.

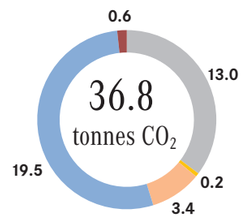
The bottom line is that consumption of energy resources is far lower in the GLE 500 e 4MATIC. The best result is achieved when renewable energy is used to charge the batteries. Over the entire life cycle, this can translate into primary energy savings of 42 percent. This is equivalent to the energy content of around 16,600 litres of petrol.

What's more, the high-quality raw materials used are not lost. This also applies to the lithium-ion battery and other specialised components in the GLE 500 e 4MATIC. Together with the suppliers and the disposal partners, innovative recycling concepts and technologies have been evolved that enable recovery of the valuable substances used. The focus here was also on optimising the recycling processes to ensure safe and efficient dismantling and on obtaining marketable products from the recycling of the hybrid components.

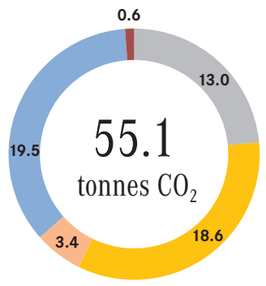
It depends on the electricity mix

The GLE 500 e 4MATIC sets new records when it comes to emissions. However, crucial factor for the carbon footprint is whether the electricity is obtained from renewable sources (hydro power or wind power) or whether the EU electricity mix forms the basis.

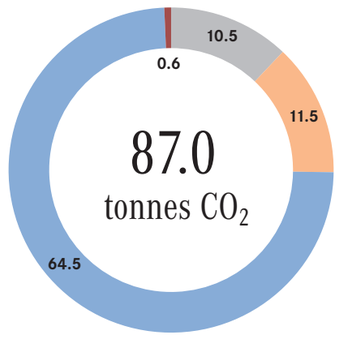
Values are rounded



Mercedes-Benz GLE 500 e 4MATIC
(hydro power)



Mercedes-Benz GLE 500 e 4MATIC
(EU electricity mix)



Mercedes-Benz GLE 500 4MATIC

CO_2 emissions

- Car production
- Electricity generation
- Fuel production
- Operation
- End of Life

When the CO_2 footprint of the GLE 500 e 4MATIC is compared with that of the GLE 500 4MATIC, it is plain to see that, the emissions caused by producing the Plug-In Hybrid, which are around one quarter higher, are more than compensated for on the bottom line.

Analysis of the emissions during the individual phases of the life cycle makes it very clear: it is still the actual process of car operation that offers the greatest potential to reduce CO_2 emissions in particular. Incidentally, this is also an incentive for the driver to drive as efficiently as possible.

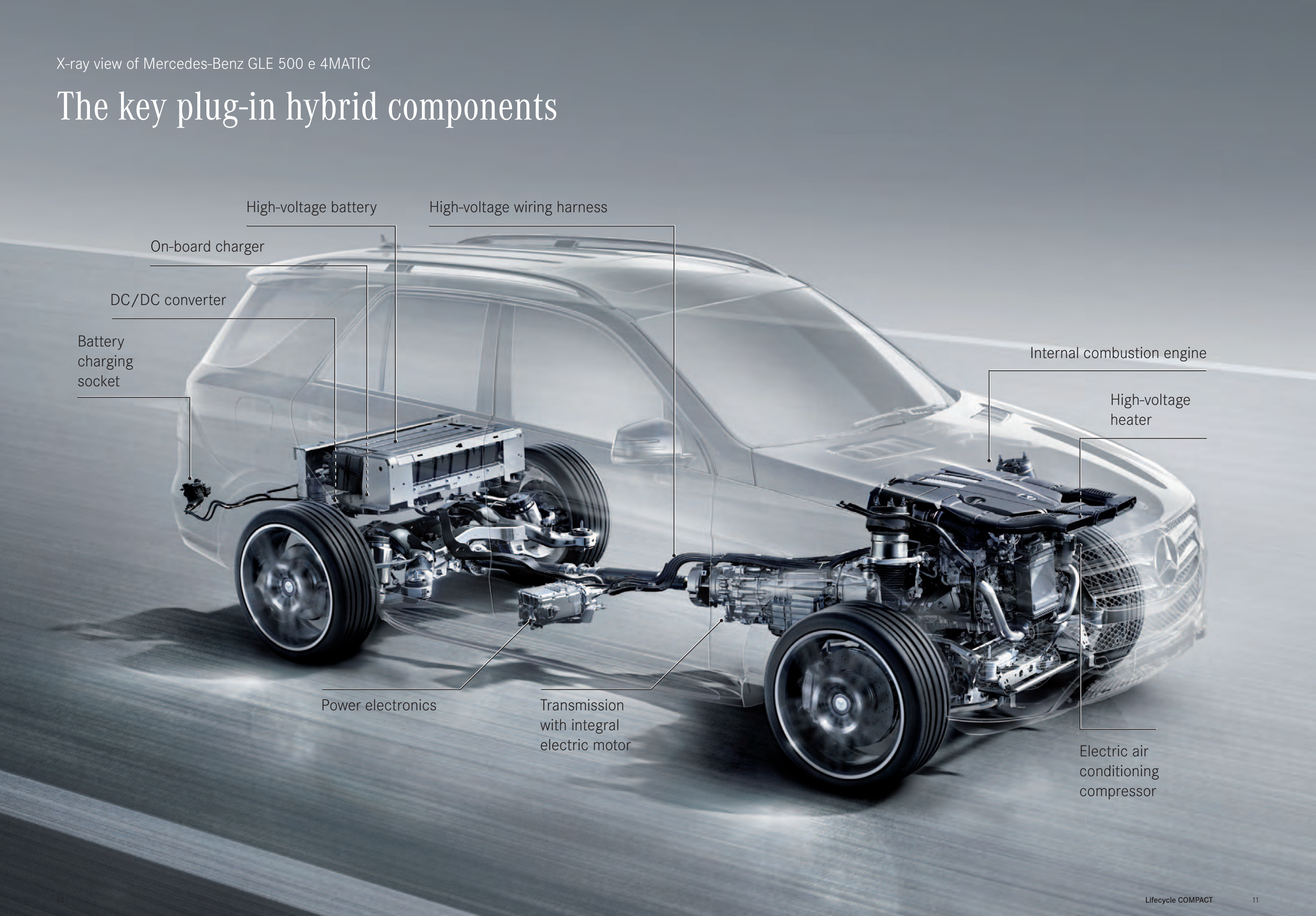
As more and more vehicles are turning to electric power, a further factor is becoming increasingly important: the generation of the electricity, especially for charging the batteries. If electricity generation takes place by renewable means using wind power or hydro power, the advantage of the plug-in hybrid over the comparable vehicle with combustion engine is greater still.

External charging with the European electricity mix can cut CO_2 emissions by around 37 percent (31.9 tonnes) compared with the GLE 500 4MATIC. An even more impressive reduction of 58 percent (50.3 tonnes) is possible if renewable electricity is used.

When it comes to other environmental impacts, such as summer smog or acidification and eutrophication potential, the GLE 500 e 4MATIC offers clear benefits over its entire life cycle when charged with electricity from hydro power. Overall, a major improvement in environmental compatibility has been brought about with the GLE 500 e 4MATIC.

X-ray view of Mercedes-Benz GLE 500 e 4MATIC

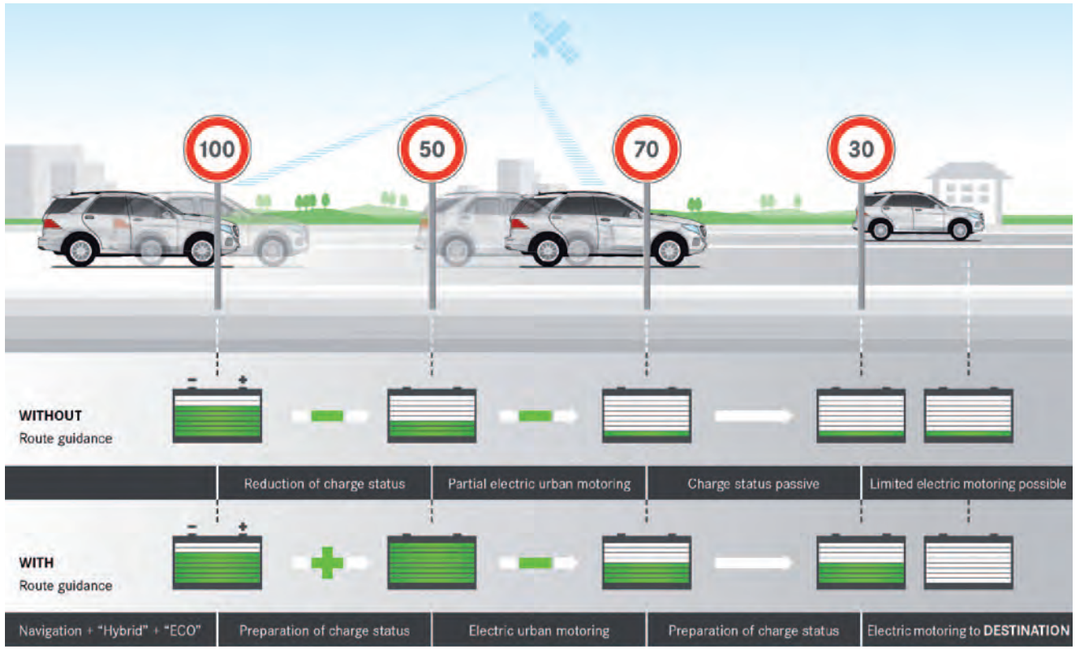
The key plug-in hybrid components



Clever strategists in the background

Working in the background, the intelligent drive management system in the GLE 500 e 4MATIC selects the ideal combination of combustion engine and electric motor automatically. Then there are innovative functions such as the route-based or radar-based operating strategy, which help the driver to drive economically.

Driving the new GLE 500 e 4MATIC is as easy as with any other automatic vehicle from Mercedes-Benz: simply climb in, start the engine and off you go. As you do so, enjoy its exemplary efficiency and the superb acceleration of the electric motor.



The sophisticated technology of the GLE 500 e 4MATIC makes it no more difficult to drive than a conventional vehicle with automatic transmission. Working in the background, the intelligent drive management system selects the ideal combination of combustion engine and electric motor automatically. At the same time, the GLE 500 e 4MATIC offers all the characteristics of a state-of-the-art hybrid vehicle. These include Silent Start (almost noiseless electric start), Boost (activation of the electric motor for accelerating) and Regeneration (when braking and rolling to a standstill, energy is recuperated and stored in the battery).

Those who wish can, however, control the hybrid interaction between combustion engine and electric motor themselves, by intervening manually to place the emphasis on economy, comfort or sportiness, for instance. For this purpose, there are four operating modes – HYBRID, E-MODE, E-SAVE, CHARGE – and four drive modes to choose from. They can be selected using the operating mode switch as well as the rotary push-button control in the centre console. Graphics in the instrument cluster or the large media-info display in the centre of the dashboard notify the driver of the current setting.

When the driver enters a destination in the navigation system, the intelligent operating strategy selects the optimum combination of electric motor and combustion engine for providing drive power along the specific route.

The best strategy for efficient operation is anticipatory driving. In conjunction with COMAND Online, this is helped by the route-based operating strategy, represented by a green cloud in front of the vehicle in the COMAND display. if the exact destination is known because the relevant data has been entered into the navigation system, charge and discharge of the high-voltage battery are controlled to ensure the optimal use of energy on the overall route. If, for instance, the radar system detects a slower-moving vehicle in front and the driver then lifts off the accelerator, the GLE will automatically vary its deceleration using the electric motor. In this way frequent braking, particularly in stop-and-go traffic, can be avoided.

Another key point is the requirement that urban areas should be reached with a fully charged battery if possible, so that the vehicle can be driven efficiently in stop-and-go traffic - and frequently in electric mode.

Would you have known that...

...2005 Mercedes Benz first received a certificate for systematic environmentally sound product development (Design for Environment) in accordance with ISO TR 14062 from TÜV Süd Management Service GmbH in 2005?

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.

...37 components in the new GLE are made from high-quality recycled plastics? Their total weight is exactly 37.1 kg.

This means that Mercedes-Benz has increased the proportional weight of recycled material by 29 percent compared to the previous model. The recycled components include the wheel arch linings which are made mainly from the plastic polypropylene. Starter batteries and bumper coverings were used for the recycled material.

...13.1 kg is the total weight of the GLE components made from renewable raw materials? A total of 15 components in the new GLE are produced using natural materials.

Their total weight has increased by 153 percent compared to the previous model. By way of example, paper is used in the luggage compartment floor and bast fibres in trim panels.

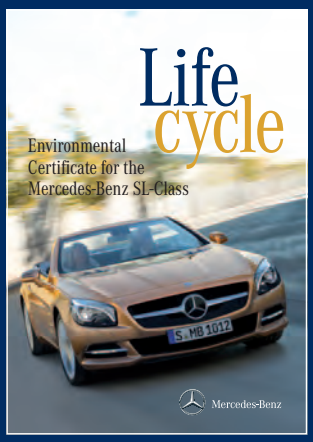
...1993 Mercedes-Benz introduced a take-back system, so it leads the way in the area of workshop disposal and recycling, too?

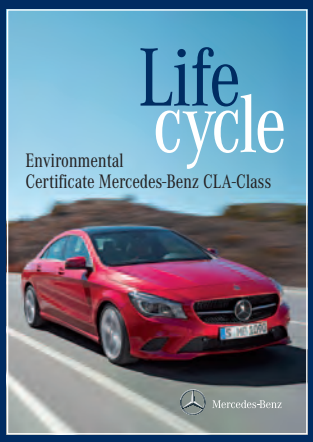
For convenient recycling, a comprehensive network of collection points and dismantling facilities is available to Mercedes customers. Owners of used cars can find out all the important details relating to the return of their vehicles via the free phone number 00800 1 777 7777.

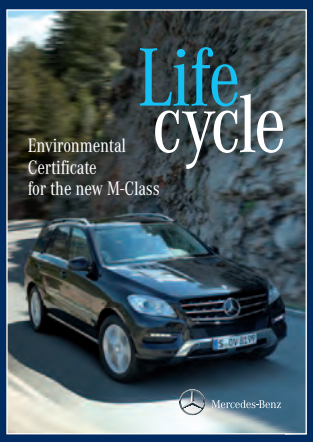
...33 years before the GLE 500 e 4MATIC arrived, Mercedes-Benz had already unveiled the first concept car with hybrid drive in the 190 model - the precursor to the C-Class?

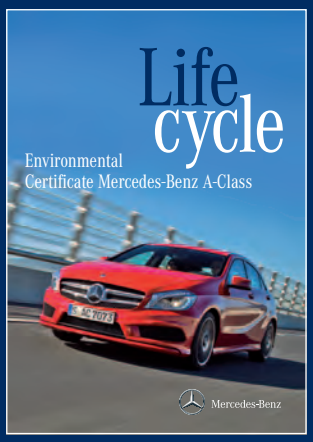
In this special version of the 190 model from the year 1982, a two-cylinder horizontally opposed engine was used to charge the battery. Many further test vehicles followed, culminating in 2009 with the debut of the world's first standard-production hybrid drive system with lithium-ion battery: for a long time, the S 400 HYBRID was the most fuel-efficient petrol-powered luxury saloon and the most successful hybrid in its segment.

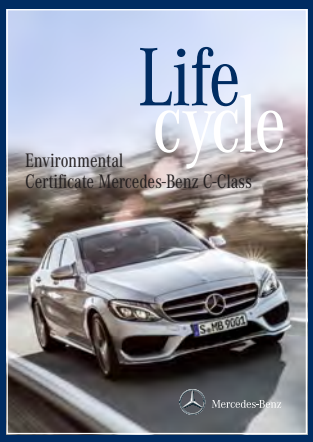
Lifecycle has been presenting and documenting the Environmental Certificates for Mercedes-Benz vehicles since 2009. If you're looking for detailed information about the complex matter of vehicles and the environment, you've come to the right place. The brochures are available under: www.mercedes-benz.com.

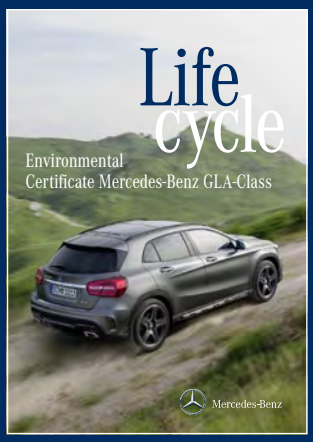


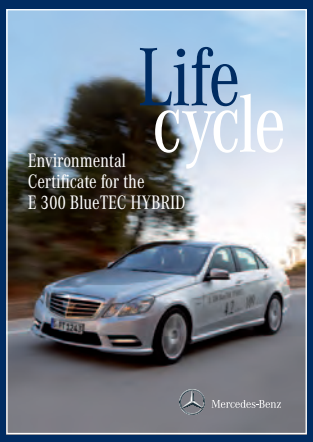


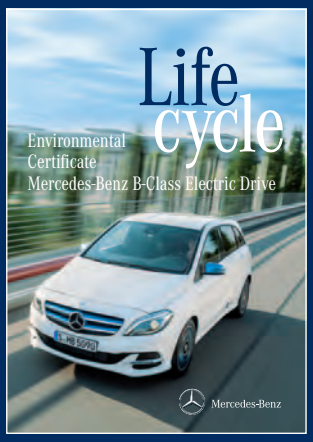


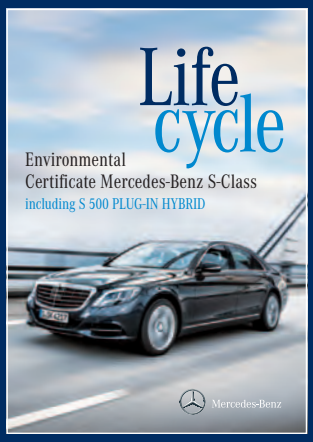












As early as 2005 the Mercedes-Benz S-Class was the first-ever vehicle to be awarded the Environmental Certificate from TÜV Süd.

For ten years now, Mercedes-Benz has been comprehensively analysing and documenting all environmentally relevant aspects of important new vehicles – from manufacture to recycling.

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