



## Luxury, efficiency, perfection

## Press Information

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The descriptions and data contained in this press kit apply to the international Mercedes-Benz model range. Country-specific variations are possible.

## Highest levels of refinement: the large Mercedes-Benz luxury saloons and coupés

**With the new generation of the CL and new engines for the S-Class, Mercedes-Benz once again raises the standard for efficiency and exclusivity in the luxury saloon and coupé segment. The CL and S-Class come with highly efficient engines with direct petrol injection whose output has been increased by as much as 12.5 percent and whose petrol consumption has been reduced by as much as 24 percent. The new S 350 BlueEFFICIENCY with V6 engine, for example, is content with just 7.6 litres of premium petrol per 100 kilometres in the New European Driving Cycle (NEDC). That corresponds to CO<sub>2</sub> emissions of 177 g/km (previous model 10.0 l/100 km, 234 g/km CO<sub>2</sub>). In the new versions S 500 BlueEFFICIENCY and CL 500 BlueEFFICIENCY, the combined fuel consumption declined to 9.4 and 9.5 litres per 100 kilometres respectively; that is equivalent to 219 and 224 g/km CO<sub>2</sub>. Crucial to this enhanced efficiency is the newly developed BlueDIRECT technology with third-generation spray-guided direct petrol injection in combination with the standard-fit start/stop function and the new 7G-TRONIC PLUS seven-speed automatic transmission. Innovations like the Active Blind Spot Assist and Active Lane Keeping Assist ensure that the CL and S-Class remain the yardstick for automotive progress also in the area of active safety.**

The innovative V6 and V8 power plants for the luxury saloons and coupés from Mercedes-Benz establish a modular petrol engine family designed for utmost flexibility. Depending on configuration, both engines operate with or without turbocharger and can be combined with 4MATIC all-wheel drive and hybrid modules. As first new eight-cylinder engine Mercedes-Benz presents the 4.6-litre twin-biturbo unit that does service in the S 500 BlueEFFICIENCY and the CL 500 BlueEFFICIENCY. The new 3.5-litre V6 starts as a naturally aspirated variant in the S 350 BlueEFFICIENCY. The new Mercedes-Benz engines equally impress

with significantly reduced consumption and emissions, but higher power. Besides the third-generation spray-guided direct petrol injection featuring multiple injection, multi-spark ignition and piezo injectors, the standard-fit ECO start/stop function and the friction-optimised 7G-TRONIC PLUS seven-speed automatic transmission featuring new torque converter technology contribute to this result.

### **S 350 BlueEFFICIENCY: the most economical petrol model in the luxury class**

Compared with the previous power plant with the same displacement, the output of the new V6 petrol engine of the S 350 BlueEFFICIENCY has increased by 12.5 percent from **200 kW** (272 hp) to **225 kW** (306 hp). The torque has increased by 5.7 percent from 350 to 370 Newton metres. Parallel to the increase in output, consumption has been reduced by 24 percent from 10.0 litres of premium petrol per 100 kilometres to **7.6 litres per 100 kilometres**. This makes the S 350 BlueEFFICIENCY the **most economical petrol-powered model of the luxury class**.

The CO<sub>2</sub> emissions likewise have declined by 24 percent from 234 grams per kilometre to 177 grams per kilometre.

### **New V8 biturbo engine for CL and S-Class with great potential for savings**

The new V8 biturbo engine in the S 500 BlueEFFICIENCY and CL 500 BlueEFFICIENCY, with its 4663 cubic centimetres displacement, produces **320 kW** (435 hp) so that despite 0.8 litres less displacement, it is still around 12 percent more powerful than its predecessor, which had an output of **285 kW** (388 hp). At the same time, torque was raised from 530 Nm to an impressive 700 Nm – an increase of 32 percent. Combined consumption in the New European Driving Cycle (NEDC), on the other hand, drops by around 22 percent in the CL 500 BlueEFFICIENCY to **9.5 litres of premium petrol** per 100 kilometres. CO<sub>2</sub> emissions sink from 288 to 224 grams per kilometre.

The fuel consumption of the S 500 BlueEFFICIENCY is **9.4 litres of premium petrol per 100 kilometres**, 15.5 percent (short wheelbase) and 16 percent (long wheelbase) better than that of the previous model. An outstanding value in this output category, it equates to CO<sub>2</sub> emissions of 219 grams per kilometre.

### **S 350 BlueTEC: most fuel-efficient S-Class of all time**

The series of highly efficient Mercedes-Benz internal combustion engines is made complete by the new 3.0-litre diesel of the **S 350 BlueTEC**. The combined fuel consumption is only **6.8 litres of diesel fuel per 100 kilometres** – eleven percent less than in the previous model. That equates to CO<sub>2</sub> emissions of 177 grams per kilometre. The S 350 BlueTEC is thus the **most fuel-efficient S-Class of all time**. Thanks to AdBlue® emission control as standard, the **190 kW (258 hp) S 350 BlueTEC** additionally ranks among the world's cleanest diesel models.

The **380 kW (517 hp) 12-cylinder biturbo engine** in the **CL 600** and **S 600** remains the most powerful engine for the CL and the S-Class and now also complies with the Euro 5 emissions control standard.

### **New: Active Lane Keeping Assist and Active Blind Spot Assist**

Innovations like the **Active Blind Spot Assist** and **Active Lane Keeping Assist** ensure that CL and S-Class remain the yardstick for automotive progress also in the area of safety. The Active Lane Keeping Assist springs into action when the vehicle inadvertently crosses a solid line to the right or left of its lane or a solid line on the outer side of a bend. In this case the Electronic Stability Program ESP® brakes the wheels on the opposite side of the vehicle to prevent unintentional swerving out of the lane.

Also new is the Active Blind Spot Assist, which warns the driver by displaying a red warning in the glass of the relevant exterior mirror when it detects that changing lanes would be too dangerous. If the driver ignores the warnings and comes dangerously close to a vehicle in the neighbouring lane, a novel feature of the system acts: a corrective braking intervention via ESP® on the wheels of the opposite side of the vehicle.

### **Advanced radar- and camera-based assistance systems**

Like the S-Class the new generation of the CL additionally gets the **Adaptive Highbeam Assist**. Moreover, Mercedes-Benz now also offers **Night View Assist Plus** for the luxury coupé with a special infrared camera for pedestrian detection. The images supplied by the windscreen camera are also used by the new, optional **Speed Limit Assist**, which recognises speed limit signs in passing and shows the relevant speed limit in the central display and on the navigation system's map display (standard for the CL 600).

Mercedes-Benz has also improved the long and medium-range radar used by the **Brake Assist System PLUS (BAS) PLUS** and the **DISTRONIC PLUS proximity control** in the CL. From the S-Class the large Mercedes coupé also gets the ATTENTION ASSIST drowsiness detector.

Handling dynamics and active driving safety are further improved by the Direct-Steer system, with variable ratio depending on steering angle, and the modified active suspension **Active Body Control (ABC) with crosswind stabilisation**. Like the Torque Vectoring Brake - targeted, one-sided braking intervention at the inside rear wheel when cornering, which enables the car to turn into the bend with even greater agility - both features also are familiar from the S-Class.

## **First-rate onboard infotainment**

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In line with its serene character and claim to be a technological masterwork, the Mercedes-Benz luxury class also sets standards where onboard infotainment is concerned. From the S-Class the CL gets the optional **SPLITVIEW** technology for the operating and display systems COMAND und COMAND APS (standard for the CL 600). This is complemented by the **Navigation package** (standard for the CL 600) with hard-disc navigation (40 gigabytes), 7.2 gigabyte hard disc for storing around 2500 digital music files, Gracenote® database and Music Search function. The latest **LINGUATRONIC** voice-operated control system rounds off the high-grade package.

The **surround sound system** with Discrete Logic7® technology and 14 high-performance loudspeakers, developed by Mercedes-Benz together with the audio specialists Harman Kardon®, creates an outstanding sound experience in the CL (standard for the CL 600).

The new Bang & Olufsen **BeoSound AMG sound system** tailored to the luxury saloon's interior is available as a further new feature for the S-Class. A combination of 15 loudspeakers and two amplifiers with a total output of 1200 W ensures a thrilling quality of sound from this high-end system. The algorithm of the digital sound processor allows a choice between high-end studio sound and surround sound, and the audio output can be focused exactly on the front seat positions, the rear seats or the centre of the interior.

## **Fine materials and first-class finish**

In the interior too the Mercedes-Benz developers and designers have perfected the new-generation CL and S-Class with great attention to detail, emphasising the exclusive character of the two model series. In the CL the buyer can choose between four different types of wood, two different leather qualities and five tasteful colour combinations. A special highlight of this luxury coupé, which is

built with a high proportion of hand-finished work: the seats of the flagship model CL 600 are covered with particularly supple PASSION leather with a special V12 fluting design. The fine leather also is used for the upper and lower sections of the dashboard, the interior door trim, parcel shelf, and the ruffled pockets on the backs of the front seats. The trim of the roof liner and the interior trim of the A and C-pillars are clothed in Alcantara leather.

**Contact:**

Wolfgang Zanker, telephone +49 711 17-75847, [wolfgang.zanker@daimler.com](mailto:wolfgang.zanker@daimler.com)  
Michael Allner, telephone +49 711 17-75846, [michael.allner@daimler.com](mailto:michael.allner@daimler.com)

Further information from Mercedes-Benz is available online at:  
[www.media.daimler.com](http://www.media.daimler.com)

## The epitome of luxury coupés

**With a design perfected through an immaculate sense of style, highly exclusive appointments and cutting-edge technology, the extensively updated Mercedes-Benz CL underscores its claim to supremacy as the summit of automotive refinement. The entirely re-designed 320 kW (435 hp) V8 biturbo engine of the CL 500 BlueEFFICIENCY, with a combined consumption of 9.5 litres premium-grade petrol per 100 kilometres, opens a new dimension of efficiency in the luxury coupé category. Its NEDC figures show savings of around 22 percent over its predecessor model, CO<sub>2</sub> emissions having dropped from 288 grams per kilometre to 224 grams per kilometre. This significant reduction is achieved thanks to the newly-developed BlueDIRECT technology with third-generation spray-guided direct injection, with the contribution of the specially-designed BlueEFFICIENCY package of the CL 500 BlueEFFICIENCY. The package includes, among other things, energy-efficient control of alternator, fuel pump, air-conditioning compressor and power-assisted steering system, as well as the ECO start/stop function. It also features the use of low rolling resistance tyres and the energy-optimised Active Body Control system. In addition, the Mercedes-Benz developers equipped the CL with state-of-the-art multimedia technology, thus helping this model, produced with a high proportion of hand-finished work, to retain its position as the epitome of quality in its class.**

With the new generation of the CL, the Stuttgart-based automaker focuses on fuel consumption and exhaust gas emissions in the exclusive high-end segment, too. According to Dr Dieter Zetsche, Chairman of the Board of Management of Daimler AG: "The CL is the ideal ambassador for our brand. To a special degree it integrates the things that go to make a Mercedes-Benz: fascination, perfection and responsibility. And with the new generation we raise the ante particularly in the area of efficiency. But in the realms of design, safety, comfort and performance, too, the CL shows: ahead is where Mercedes is."

In addition, a combination of cutting-edge camera and radar-based assistance systems unique in the luxury coupé segment, including the innovation of the Active Lane Keeping Assist and the Active Blind Spot Assist, makes of the CL a "thinking" partner of the driver. The modified Active Body Control (ABC) with crosswind stabilisation system and the Direct-Steer system also contribute to enhancing safety and driving enjoyment.

### **Design: a muscular, self-assured presence**

The exterior appearance of the new CL generation is characterised by the terse profile of the bonnet, the dynamic V-shape radiator grille and the curving headlamps – design details that discreetly but effectively emphasise the car's elegant yet powerful lines.

The front bumper, too, presents a new design with three air intake openings and a chrome trim strip. An LED strip with chrome surround for the daytime running lamps is elegantly integrated in the side openings for the brake cooling air. With their standard-fit **Intelligent Light System (ILS)** and **Adaptive Highbeam Assist**, the headlamps offer state-of-the-art illumination technology. The latest LED technology in the turn indicators and position marker lamps rounds off the car's advanced image. The rear of the vehicle is characterised by the newly-designed tail lights.

### **New V8 biturbo engine with innovative technology**

The new-generation CL also assumes a pioneering role in the drive system sector. Under the bonnet of the CL 500 BlueEFFICIENCY and CL 500 4MATIC BlueEFFICIENCY a new V8 biturbo engine with BlueDIRECT technology delivers its impressive power. With its 4663 cubic centimetres displacement, the eight-cylinder engine produces **320 kW** (435 hp) so that despite 0.8 litres less displacement, it is still around 12 percent more powerful than its predecessor, which had an output of **285 kW** (388 hp). At the same time, torque was raised from 530 Nm to 700 Nm – an increase of 32 percent. Combined consumption in the New European Driving Cycle (NEDC), on the other hand, drops by around

22 percent to **9.5 litres of premium petrol per 100 kilometres** for the rear-wheel drive version. CO<sub>2</sub> emissions consequently sink from 288 grams per kilometre to 224 grams per kilometre. The CL 500 BlueEFFICIENCY requires a mere 4.9 seconds to accelerate from a standstill to 100 km/h (previous model: 5.4 seconds). Summing up: the CL 500 BlueEFFICIENCY is significantly more agile, torquey and thriftier than its predecessor.

The BlueDIRECT technology package of the V8 biturbo includes a series of new developments, unique in their combination. Worthy of mention among these is the **third generation spray-guided direct petrol injection** with piezo injectors and multi-spark ignition with up to four ignition sparks within a millisecond. Together both enable an innovative combustion process called "**homogenous split**". Other factors contributing to the exemplary low fuel consumption continue to be the consistent use of friction-optimised pistons, piston rings and cylinder barrels, the on-demand control of oil pump and the new three-phase thermal management in the coolant circuit. The luxury coupé's technology package includes the **ECO start/stop function** and alternator control in accordance with the handling situation and on-board voltage, including kinetic energy recuperation in overrun mode.

The **CL 600**, with its **380 kW** (517 hp) 12-cylinder biturbo engine remains the top-of-the-line model: it accelerates the luxury coupé from a standstill to 100 km/h in impressive 4.6 seconds and now also complies with the Euro 5 emissions control standard.

### **A unique combination of driver-assistance systems**

With state-of-the-art assistance and protection systems the new generation CL underpins its status as an automotive masterwork and technology platform of the Stuttgart-based company. The attentive assistants turn the Mercedes model into an "intelligent" partner which is able to "see", "feel", respond "instinctively" to detected dangers and act "on its own initiative" in order to avoid accidents or to reduce their severity. The trailblazing driver assistance systems in the CL are based on cutting-edge radar, camera and sensor technology.

Thus, in the new-generation CL the **Active Lane Keeping Assist** celebrates its premiere (at the same time as in the S-Class). If the vehicle threatens to cross a broken lane marking line, the system actuates an electric motor in the steering wheel, causing it to vibrate briefly – giving the driver a discreet but effective warning hint to countersteer immediately. The active system springs into action if the Mercedes coupé unintentionally crosses a continuous lane marking line to the right or to the left. In this case, it intervenes by gently braking the wheels of the opposite side of the car, helping the driver to stay in the lane. In order to do this Active Lane Keeping Assist avails itself of the Electronic Stability Program ESP®.

Active Lane-Keeping Assist evaluates information provided by a camera mounted on the inside of the windscreen. It identifies the contrast between the road surface and the lane marking lines. In addition to this, using radar the system scans the side of the roadway for crash barriers and other roadway edge markings. This Mercedes assistance system also evaluates the driver's actions and can thus reliably determine whether the car is departing from the lane intentionally or not. For this reason, there is no warning if the driver accelerates hard just before overtaking or when accessing a motorway, or if he brakes hard or steers into a curve.

#### **Targeted brake actuation: Active Blind Spot Assist**

A further innovation Mercedes-Benz offers for the CL is **Active Blind Spot Assist**, a system that makes use of a multi-stage warning concept. If it detects that a change of lane would be too dangerous, it warns the driver by displaying a red triangle in the glass of the exterior mirror. Close-range radar sensors monitor the area immediately to the side and to the rear of the car. If the driver disregards this warning and, for example, actuates the turn indicator, an audible warning also sounds. If the driver continues to ignore the warnings and comes dangerously close to a vehicle in the neighbouring lane, a novel feature of the system acts: a **corrective braking intervention** via ESP® on the wheels of the opposite side of the vehicle. This causes a yaw movement about the car's vertical axis due to the unequal distribution of the braking forces. If despite this course correction an accident cannot be avoided, the Active Blind Spot Assist system can reduce the consequences of a collision through the brake actuation.

**Adaptive Highbeam Assist** is another standard-fit system featured by the CL. This camera-based system can recognise oncoming vehicles or vehicles ahead with their lights on, and then controls the headlamps to ensure the best possible beam range without dazzling other road users. In addition, Mercedes-Benz offers the **Night View Assist Plus** system for the CL, featuring a special infrared camera for pedestrian detection: as soon as the system detects pedestrians on the road ahead, these are highlighted additionally in the display, in order to catch the driver's attention better.

The images supplied by the windscreen camera are also used by the new, optional **Speed Limit Assist**, which recognises speed limit signs in passing and shows the relevant speed limit in the central display and on the navigation system's map display (standard for the CL 600).

For the new-generation CL, Mercedes-Benz has also improved the long and medium-range radar used by **Brake Assist PLUS (BAS PLUS)** and **DISTRONIC PLUS proximity control**.

#### **An "electronic crumple zone": the PRE-SAFE® Brake**

Mercedes-Benz also offers another radar based system for the luxury coupé as a component of the Driving Assistance package Plus in the form of the PRE-SAFE® Brake. If the driver is distracted and fails to recognise the imminent danger of a rear-end collision or the warning signal of an assistance system, this system can intervene and brake the vehicle independently. If the driver fails to react even after automatic, partial braking action, this most recent development stage of the PRE-SAFE® Brake activates the maximum braking pressure around 0.6 seconds before what it now recognises as an unavoidable collision – an emergency braking action that can significantly mitigate the severity of the impact. The PRE-SAFE® Brake thus acts as a kind of "electronic crumple zone".

Drowsiness is one of the most common causes of accidents. This is why Mercedes experts have developed the **ATTENTION ASSIST** system which forms part of the standard equipment of the new-generation CL. As the vehicle is being driven, the system continuously evaluates more than 70 different parameters in order to identify driver drowsiness and provide a warning before the dangerous micro-sleep phase begins. Observing the driver's **steering behaviour** has proved to be a particularly strong indicator: several years of practical research by Mercedes-Benz have shown that drowsy drivers make minor steering errors which they often correct very rapidly in a characteristic way. This steering behaviour is recognised by a special steering angle sensor. Observing the driver's eyes cannot always provide conclusive evidence of sleep since many drivers can experience micro-sleep with their eyes open.

### **Active Body Control reduces the effect of a crosswind**

The CL also meets the highest standards in terms of driving dynamics and agility. This is in part thanks to **Direct-Steer**, with a steering ratio that varies with the steering angle, and modified **Active Body Control (ABC)** with **crosswind stabilisation** (standard for the CL 500 BlueEFFICIENCY and CL 600). This latest stage in active suspension development modifies the wheel load distribution via the ABC spring struts within milliseconds, depending on crosswind direction and intensity, to the extent that it can largely compensate the effects of the crosswind.

The Active Body Control suspension system with which Mercedes-Benz ushered in new dimensions of driving dynamics in the CL Coupé of the preceding C 215 model series in 1999, is unique worldwide as it not only regulates roll, but pitching and squatting movements as well, ensuring a perfect harmony of comfort and handling stability. Since the introduction of this innovative system, engineers in Sindelfingen have continuously improved on it, so that eleven years later it still marks the summit of automotive engineering. In addition to crosswind stabilisation, in its latest version the active suspension features a new energy-optimised hydraulic pump that takes part of the burden off the engine, contributing towards reducing fuel consumption.

Additional safety and agility at the physical limits is provided in the new-generation CL by the standard-fit **Torque Vectoring Brake** – targeted, one-sided braking intervention at the inside rear wheel when cornering. This enables the luxury coupé to turn into the bend under precise control with even greater agility.

### **Onboard infotainment: the most advanced multimedia technology**

In line with its serene character and claim to be a technological masterwork, the CL also sets standards where onboard infotainment is concerned. Thus, the Stuttgart automotive manufacturer equips its flagship model with the new **SPLITVIEW** technology for the COMAND control and display system centrally located in the centre console (standard for the CL 600 in conjunction with Front Seat Entertainment package). This innovative display concept allows the driver and front passenger to view different contents simultaneously on one and the same screen. While the driver, for example, uses the map-based navigation system, the front passenger can be watching a film on DVD.

The standard **COMAND** control and display system with **Bluetooth®**, **USB and SD card interfaces** offers customers the possibility of exporting their stored data to other vehicles and multimedia devices. It is also possible to transfer and update navigation data. In the glove compartment Mercedes-Benz integrates as optional equipment the **Media Interface** – an interface for mobile audio and video devices – devices such as the iPod® and every other possible customer device.

The optional **Navigation package** with COMAND APS (standard for the CL 600) features a Europe-wide navigation system whose data are stored on a 40-gigabyte hard disc, enabling extremely rapid route calculation. Another factor contributing to a high level of navigation comfort is the **detailed three-dimension map display** including updates free of charge for three years. For musical entertainment COMAND APS provides a radio, a CD/DVD player with MP3 function, an equaliser with speed-dependent volume control and the MUSIC REGISTER with a **7.2 gigabyte hard disc** which stores around 2500 digital music files in MP3, AAC or WMA format (which can be conveniently transferred to the REGISTER from PC memory cards). The system recognises music files played on CD, DVD or from the

MUSIC REGISTER using its stored **Gracenote® database**, and shows the title, album and performer in the colour display. Another new function, **Music Search**, enables CL drivers and passengers to search SD memory cards, USB sticks, CDs and DVDs for specific music titles and performers.

The Navigation package also includes the latest-generation **LINGUATRONIC** voice-operated control system that controls the navigation, telephone and audio devices via whole-word input. Benefit: the driver no longer needs to spell out his commands but simply speaks the corresponding words as whole words when entering the destination or choosing a radio station or a music title from the MUSIC REGISTER, or when calling up a name from the phone book.

The further developed **surround sound system** with Discrete Logic7® technology developed by Mercedes-Benz together with audio specialists Harman Kardon® delivers an outstanding performance with three-dimensional sound as a natural 360-degree musical experience for all passengers of the CL. Mercedes-Benz offers the surround sound system together with SPLITVIEW and a six-disc DVD changer as part of the Entertainment package (standard for the CL 600).

### **Interior: carefully selected materials and first-class finish**

In the interior, too, Mercedes-Benz developers and designers perfected the CL paying careful attention to detail. A total of **four different kinds of fine wood** open up the possibilities for perfectly matched material and colour concepts according to personal taste: apart from light and dark high-gloss burr walnut, there is black ash and brown high-gloss poplar (CL 600). Another particularity: in line with the central importance awarded to the concept of sustainability within the Mercedes-Benz corporate philosophy, the CL employs only European wood from renewable forestry sources. Most of the wood parts are **hand-made** and matched individually for colour and grain by experienced craftsmen.

The seat covers of the new CL are of the most exquisite quality. For this luxury model there are **two different kinds of leather** available which thanks to their low pre-tensioning and consequent wrinkle effect appear supple and comfortable

from the very first glance. There is a choice of **five tasteful colour combinations** Page 17  
for the vehicle interior: black/black, savannah beige/cashmere beige, sahara  
beige/black, and the novel combinations alpaca grey/basalt grey and  
aubergine/black.

The **multifunction steering wheel** of the CL has also been modified by the  
Mercedes-Benz designers: the rim and airbag module are lined with soft nappa  
leather as standard. The new, flatter airbag module also lends a sporty touch to  
the multifunction steering wheel covered in leather sewn with sophisticated  
double stitching.

Apart from this, Mercedes-Benz makes more use of light as a styling element in  
the vehicle interior. In future customers who specify the optional **ambient  
lighting** (standard for the CL 600) have a choice between three lighting moods:  
solar (amber), neutral (white) and polar (ice-blue).

### **Tradition: an exclusive line of ancestors**

The new generation CL continues the great tradition of Mercedes-Benz coupés,  
which reaches back to the legendary supercharged cars of the 1920s and '30s.  
Since the 1950s, in particular, the brand with the three-pointed star has produced  
an uninterrupted series of exclusive two-door cars which combine sophisticated  
design with trailblazing technology – every model an automotive classic. The W 188  
model series 300 S Coupé which entered series production in 1952 marked the  
beginning. A contemporary report called it the "measure of what it is possible to  
achieve in automotive engineering".

This statement has retained its full validity for all subsequent models, right  
down to the current CL of model series C 216, because the luxury coupés from  
Mercedes-Benz featured – apart from their timeless design and the highest level  
of comfort – trailblazing innovations in automotive technology. Thus it was that in  
1961 the 220 SE Coupé was the first series-production Mercedes-Benz to be  
equipped with disc brakes. In 1995 the Electronic Stability Program ESP<sup>®</sup>  
celebrated its world premiere in the S 600 Coupé of model series C 140, and in

1999 the Active Body Control suspension system was introduced for the first time in the CL-Class, model series C 215. With the PRE-SAFE<sup>®</sup> brake a further technological innovation made its debut in a large Mercedes-Benz coupé. In the new CL generation, two new developments, Active Lane Keeping Assist and the Active Blind Spot Assist, will help prevent accidents or reduce their severity. Page 18

The new-generation CL can already be ordered from Mercedes-Benz sales outlets and authorised dealers. The prices:

- CL 500 BlueEFFICIENCY: 118,346 euros
- CL 500 4MATIC BlueEFFICIENCY: 123,463 euros
- CL 600: 162,792 euros

(all prices include 19% VAT)

## Model range

# Luxury and performance

- **Perfect combinations: equipment packages and driver assistance systems**
- **CL 600: a masterwork with top-of-the-line equipment**
- **Exclusive individuality: the AMG Sports package and designo**

For decades now, the large coupés from Mercedes-Benz have represented motoring refinement of the highest level. Exceptional design, craftsmanship and pioneering technology flow together, blending into a style-generating unity. The history of the great two-door cars bearing the three-pointed star goes back to the large supercharged cars of the 1920s and '30s. The new CL generation continues in this great unbroken tradition of automotive masterworks.

With targeted design modifications such as the new, more strongly pointed radiator grille, the new front bumper with integrated LED strips for the daytime running lamps and the standard bi-xenon headlamps, the Mercedes developers cultivate the poise and dynamism expressed in the design language of the two-door car in a contemporary manner.

The high technological level exemplified by Active Body Control (ABC) with crosswind stabilisation sets new standards in driving dynamics and ride comfort. And with safety systems such as the ATTENTION ASSIST drowsiness recognition system, Active Blind Spot Assist, Active Lane Keeping Assist, Adaptive Highbeam Assist and automatic PRE-SAFE<sup>®</sup> full brake application, the CL takes pole position in the luxury coupé class.

This is also true of the engine line-up: the entirely re-developed V8 biturbo engine with a displacement of 4.6 litres, **320 kW** (435 hp) output, 700 Newton metres torque and spray-guided direct petrol injection in the **CL 500 BlueEFFICIENCY**

achieves top marks in its class in terms of efficiency, with a consumption of only 9.5 litres premium petrol per 100 kilometres in the combined NEDC cycle. This means fuel savings of around 22 percent over the predecessor model. CO<sub>2</sub> emissions drop from 288 to 224 grams per kilometre. At the same time, output climbs **35 kW** (47 hp) compared with the 5.5-litre naturally aspirated engine in the preceding model.

The **CL 600** is the renowned summit of the drive units, with its **380 kW** (517 hp) V12 5.5-litre biturbo engine developing a torque of 830 Newton metres. With the CL 500 BlueEFFICIENCY with BlueDIRECT technology, the customer can choose between a version with rear-wheel drive and one with the 4MATIC all-wheel drive system.

The high-value appointments and equipment of the luxury coupé obey the highest standards of exclusivity and individuality. An extract from the list of the car's standard equipment:

- Active Body Control with crosswind stabilisation
- Adaptive driver and front-passenger airbags
- Adaptive Highbeam Assist
- Adaptive brake lights
- Anti-lock braking system (ABS)
- ATTENTION ASSIST
- 7G-TRONIC PLUS automatic transmission (CL 500 BlueEFFICIENCY)
- Automatic steering wheel adjustment for entry and exit
- Bluetooth<sup>®</sup>, SD, USB, AUX-IN audio and video interface
- Brake Assist (BAS)
- ADAPTIVE BRAKE
- COMAND system with CD/DVD player, SD card slot, USB interface and Gracenote<sup>®</sup> data base
- DIRECT SELECT gearshift
- Direct-Steer system
- ECO start/stop function (CL 500 BlueEFFICIENCY)
- ESP<sup>®</sup> with acceleration skid control (ASR)

- Headlamp Assist
- Electric parking brake
- Belt tensioners on all seats
- Intelligent Light System with country light, motorway mode, enhanced foglamps, active light function and cornering light function
- Leather upholstery
- 18-inch light-alloy wheels
- Memory package for seats, steering wheel and exterior mirrors
- Metallic paintwork
- Nappa leather multifunction steering wheel
- PARKTRONIC with Parking Guidance
- PRE-SAFE®
- Rain sensor with two sensitivity levels
- Tyre pressure loss warning system
- Tilting/sliding glass sunroof, electric, with PRE-SAFE® function
- Door power closing
- Sidebags front and rear
- Heated front seats
- LED daytime running lamps integrated in bumper
- Telephone keypad
- Cruise control
- Doorhold function
- Four-zone automatic climate control
- Front seats with electric fore/aft and height adjustment with lumbar support and PRE-SAFE® positioning function
- Tinted, sound-insulating, infrared-reflecting laminated glass all round
- Windowbags

To enable drivers to benefit to the greatest extent from the advanced assistance systems and comfort elements, for the CL Mercedes-Benz offers certain innovations as packages upon request. This guarantees that the systems complement each other perfectly.

- In the **Driving Assistance package Plus** Mercedes-Benz mainly combines systems that can actively help to prevent rear-end collisions: the radar-based proximity control system DISTRONIC PLUS, Brake Assist PLUS and the PRE-SAFE<sup>®</sup> Brake. This equipment package also includes Active Lane Keeping Assist and Active Blind Spot Assist.
- Mercedes-Benz offers the **Navigation package** for high-mileage drivers. This includes the COMAND APS multimedia system with 40-gigabyte HDD navigation, 3-D map display, navigation data updates free of charge for a period of three years, LINGUATRONIC voice-operated control, MUSIC REGISTER, Music Search and Speed Limit Assist (standard for the CL 600).
- An exclusive audio experience and optimum video entertainment for the front passenger are provided by the **Front Seat Entertainment package**. It includes the SPLITVIEW display, the 6-disc DVD changer and the Harman Kardon<sup>®</sup> Discrete Logic 7<sup>®</sup> surround sound system with headphones and remote control (standard for the CL 600).

### **The CL 600: the summit of driving refinement**

Mercedes-Benz stylishly underlines the exceptional status of the twelve-cylinder CL 600 with numerous distinguishing features in the exterior and interior. In addition to the model-specific radiator grille with two twin louvres, these include the V12 emblem on the flanks, model-specific, five-spoke 18-inch light-alloy wheels in a bi-colour look and a large range of standard option packages.

Standard ex factory specifications include:

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- Navigation package
- Front Seat Entertainment package
- Reversing camera
- KEYLESS-GO
- Convenience Telephony
- Anti-Theft Protection package

The front active multicontour seats and the rear seats are upholstered with particularly supple "PASSION" leather, decorated with a special V12 fluting pattern, as is the Alcantara roof liner. Among other things, the upper and lower sections of the dashboard, the door centre panels, rear shelf and ruffled pockets on driver and front passenger backrest are covered in this high-quality leather. Apart from the roof liner, the interior trim of the A and C pillars is also clothed in Alcantara leather. Luxury head restraints at front and rear bearing the V12 emblem also enhance travelling enjoyment. The V12 symbol on the backrests makes reference to the exclusive character of the vehicle. On entry, the V12 emblem lights up in the instrument cluster. Trim elements in fine brown high-gloss poplar wood, chrome-plated door sills and boot sill, together with the standard ambient lighting, round off the serene character of the Mercedes-Benz CL 600.

#### **designo and designo Selection: individual and exclusive**

For further individualisation, customers can now also choose from a restructured range of **designo** features for the CL, which further underscore the exclusive hand-finish character of the luxury model. Ten different designo paint finishes can be combined with ten designo aniline leather interiors and four natural leather interiors – with practically no limitations on personal taste. For designo wood trim, customers have a choice between natural-grain maple and natural-grain matt oak. Trim in black piano lacquer and champagne white piano lacquer can also be ordered.

Two kinds of **fine authentic granite trim** are available for the CL: labrador blue pearl and Star Galaxy black. These trim elements are made by cutting 0.6 to 0.8 mm thin stone wafers which are then coated with an adhesive layer to ensure that every grain remains exactly where it is. These thin plates are then ground between two rollers. The result is a visually undisturbed, extremely thin stone sheet, pliable thanks to the adhesive layer applied, which enables it to be moulded around narrow edges, too.

With **designo Selection**, Mercedes-Benz is offering a special, high-end package of designo features for the CL. Customers can configure their car according to their personal preferences and taste from the different designo aniline leather upholstery, wood trim elements and paint work available. The highlight is designo lettering in solid 18-carat gold on the rear air conditioning unit cover. This is exclusive to the designo Selection. The designo wood/leather steering wheel and the designo roof liner in black nappa leather or Alcantara in cashmere beige, anthracite or alpaca grey round off the refined atmosphere of the car's interior.

#### **AMG Sports package: CL with a striking sporty character**

The AMG Sports package with AMG bodystyling and AMG light-alloy wheels gives the luxurious two-door car an even more dynamic look. At the front the newly-designed front apron ensures an imposing, muscular appearance. Its distinguishing feature is a tapered air intake with a wider lower edge. The side skirts continue the design of the front bumper, with striking contours that find an echo in the rear apron. The independent rear bumper with a black insert is the perfect finishing touch.

Further highlights include the 19-inch AMG 5-spoke light-alloy wheels painted in sterling silver. With their broad format 255/40 (front) and 275/40 (rear), not only do they fill the wheel houses perfectly, lending the CL an exceptionally dynamic presence, they also enhance its handling characteristics even more. In addition, silver-colour painted brake callipers with Mercedes-Benz lettering on the front axle wheels emphasise its sporty appearance.

The CL 500 4MATIC BlueEFFICIENCY with AMG Sports package is fitted with 255/40 R 19 tyres on both front and rear axles. Optionally, 20-inch AMG light-alloy wheels in twin-spoke design with tyre sizes 255/35 and 275/35 are also available. Wood trim and the wood/leather steering wheel in black ash give the high-quality vehicle interior a very special feel. The AMG Sports package also includes sports pedals in brushed stainless steel with black rubber studs and velour floor mats with AMG lettering.

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## Technical highlights of the Mercedes-Benz CL\*

### Driver assistance systems

<b>Intelligent Light System:</b> this innovative headlamp technology provides five lighting functions which are activated depending on the driving and weather conditions.	Standard***
<b>Cornering lights:</b> this light function provides heightened safety at junctions and when driving slowly in tight bends (a component of the Intelligent Light System).	Standard***
<b>Active Light System:</b> the Intelligent Light System's bi-xenon headlamps follow the driver's steering movements (a component of the Intelligent Light System).	Standard***
<b>Motorway mode:</b> from 90 km/h the entire width of the carriageway is illuminated, improving the driver's range of vision by around 50 metres (a component of the Intelligent Light System).	Standard
<b>Enhanced foglamps:</b> This function pivots the offside headlamp outwards to illuminate the road verge more effectively (a component of the Intelligent Light System).	Standard***
<b>Country mode:</b> this function replaces the previous low-beam headlamps and provides broader and brighter illumination of the opposite road verge (a component of the Intelligent Light System).	Standard***
<b>Adaptive Highbeam Assist:</b> this system switches between high beam and low beam and adjusts the range of the headlamps in accordance with the distance to oncoming vehicles/vehicles travelling ahead.	Standard
<b>Night View Assist Plus:</b> the display in the dashboard shows a realistic grey-scale image from an infrared camera that monitors the road ahead of the CL. Any pedestrians detected are additionally highlighted in the display.	Optional

<p><b>Active Lane Keeping Assist:</b> a camera behind the windscreen recognises continuous carriageway markings and gives a warning if the car unintentionally leaves its lane. If the driver fails to react, the system intervenes via ESP<sup>®</sup>, braking one or more wheels if the vehicle crosses a continuous lane marking line, in order to prevent it straying from the lane.</p>	<p>Optional as part of the Driving Assistance package Plus</p>
<p><b>Active Blind Spot Assist:</b> this radar-based system warns the driver before a lane-change if it detects another vehicle in the exterior mirror's blind spot. If the driver fails to react to the warning, ESP<sup>®</sup> triggers a targeted braking intervention in order to counteract the course which would lead to a collision with the vehicle at the side.</p>	<p>Optional as part of the Driving Assistance package Plus***</p>
<p><b>Brake Assist PLUS:</b> this system uses radar sensors to recognise an impending rear-end collision, calculates the necessary degree of braking assistance and makes it available immediately when the driver depresses the brake pedal.</p>	<p>Optional as part of the Driving Assistance package Plus***</p>
<p><b>DISTRONIC PLUS:</b> this radar-based proximity control system automatically helps the driver to maintain a set distance from the vehicle ahead. It can brake the CL to a standstill if necessary, then accelerate again. If the distance to the vehicle ahead decreases too quickly, the system gives the driver visual and audible warnings.</p>	<p>Optional as part of the Driving Assistance package Plus</p>
<p><b>PRE-SAFE<sup>®</sup> Brake:</b> if there is imminent danger of a rear-end collision, this system brakes the CL automatically if the driver fails to react and the collision is unavoidable.</p>	<p>Optional as part of the Driving Assistance package Plus</p>
<p><b>PRE-SAFE<sup>®</sup>:</b> if the system recognises a critical driving situation, it takes precautionary measures to protect the occupants. It can, for example, initiate tensioning of the front seat belts, or closing of the side windows and sliding sunroof.</p>	<p>Standard</p>
<p><b>Chassis, steering and brakes</b></p>	
<p><b>Active Body Control (ABC):</b> active suspension system that adapts the springs to the current driving situation within fractions of a second and is able to largely compensate for the effects of crosswinds.</p>	<p>Standard**</p>
<p><b>AIRMATIC:</b> the air suspension works together with an electronically controlled damping system.</p>	<p>Standard for CL 500 4MATIC BlueEFFICIENCY</p>

<b>ADAPTIVE BRAKE:</b> this Mercedes brake system offers assistance functions, such as a HOLD function and Hill Start Assist, for even greater safety and comfort.	Standard
<b>Torque Vectoring Brake:</b> by specifically braking the rear wheels, ESP® ensures more safety at the physical limits without any loss of agility.	Standard
<b>Direct-Steer:</b> a variable steering rack ratio depending on the steering angle allows more agile handling and provides more comfort when parking and manoeuvring at slow speed.	Standard
<b>DIRECT SELECT:</b> the 7-speed automatic transmission (CL 500 BlueEFFICIENCY and CL 500 4MATIC BlueEFFICIENCY) and the 5-speed automatic transmission (CL 600) are operated electronically via a lever on the steering column.	Standard

### BlueEFFICIENCY measures

<b>ECO start/stop function:</b> in order to reduce fuel consumption, in the eight-cylinder models the engine is switched off automatically as soon as the vehicle is motionless and the driver depresses the brake pedal. The engine restarts automatically when the driver removes his foot from the brake pedal or depresses the accelerator pedal.	Standard for CL 500 BlueEFFICIENCY and CL 500 4MATIC BlueEFFICIENCY***
<b>Recuperation:</b> if the driver removes his foot from the accelerator pedal or applies the brakes in overrun mode, kinetic energy is recovered and fed to the battery.	Standard for CL 500 BlueEFFICIENCY and CL 500 4MATIC BlueEFFICIENCY

### Comfort

<b>Memory package:</b> three memory settings are stored for both the driver's and the front passenger seat. The settings for the steering wheel and exterior mirrors are also stored.	Standard
<b>Active multicontour seats:</b> depending on the steering angle, lateral acceleration and speed, the inflation pressure and volume of the air chambers in the side bolsters of the seat backrests are varied to give the driver and front passenger even better lateral support. The seats also have a massage function.	Optional (standard for CL 500 4MATIC BlueEFFICIENCY and CL 600)

<b>Ambient lighting:</b> when driving at night, optical fibres behind the trim on the dashboard and door panels provide a pleasant lighting atmosphere in the interior. The driver can choose between lighting moods "solar", "polar" and "neutral".	Optional (standard in the CL 600)
<b>PARKTRONIC including Parking Guidance:</b> ultrasonic sensors measure the length of parking spaces as the car drives past; instructions for easier parking appear in the display.	Standard
<b>Reversing camera:</b> the area behind the CL is shown in the COMAND display.	Optional
<b>Audio and communication</b>	
<b>Bluetooth® interface:</b> the mobile phone is wirelessly linked to the hands-free system.	Standard
<b>COMAND:</b> control and display system that integrates the audio unit, DVD player and telephone operation.	Standard
<b>COMAND APS:</b> the navigation data are stored on a hard disc. Further functions include the MUSIC REGISTER and voice control.	Optional (standard in the CL 600)
<b>Gracenote®:</b> database that recognises music tracks on a CD/DVD or from the MUSIC REGISTER and shows the title, album and artist on the colour display.	Standard
<b>Convenience telephony:</b> the driver and passengers are able to conduct onboard telephone conferences by mobile phone, and send or receive SMS messages. The phone is housed in a cradle under the armrest.	Optional (standard in the CL 600)
<b>Media Interface:</b> this universal interface allows portable audio devices to be connected to and controlled by the infotainment system of the CL.	Optional as part of the Navigation package (standard for CL 600)
<b>Music Search:</b> search function that searches SD memory cards, USB sticks, CDs and DVDs for specific music tracks and performers.	Standard

<p><b>Digital radio:</b> a special DAB (Digital Audio Broadcasting) tuner and additional aerials allow the reception of digital radio broadcasts.</p>	<p>Optional in conjunction with the Front Seat Entertainment package</p>
<p><b>SPLITVIEW:</b> the driver and front passenger are able to view different content on one and the same screen at the same time.</p>	<p>Optional as part of the Front Seat Entertainment package (standard for the CL 600)***</p>
<p><b>Harman Kardon® Logic 7® surround sound system:</b> a multi-channel system with innovative digital technology, an output of 610 watts and 14 loudspeakers provides surround sound for every seat.</p>	<p>Optional as part of the Front Seat Entertainment package (standard for the CL 600)</p>
<p><b>Speed Limit Assist:</b> a camera fitted behind the windscreen detects speed limit signs on the roadside. The relevant limit is then displayed in navigation system map display and in the instrument cluster.</p>	<p>Optional as part of the Navigation package (standard for the CL 600)***</p>
<p><b>LINGUATRONIC:</b> the voice-operated control system operates the radio, CD/DVD player, CD/DVD changer, navigation system and telephone.</p>	<p>Optional as part of the Navigation package (standard for the CL 600)</p>
<p><b>MUSIC REGISTER</b> with a 7.2 gigabyte hard disc which stores around 2500 digital music files in the MP3, AAC or WMA format. These can be loaded from PC memory cards.</p>	<p>Optional as part of the Navigation package (standard for CL 600)</p>

\* Excerpts; \*\* Not for CL 500 4MATIC BlueEFFICIENCY;

\*\*\* Not available in all countries

## New dimension of efficiency

- **About 22 percent lower fuel consumption: CL 500 BlueEFFICIENCY**
- **BlueDIRECT technology with third-generation direct petrol injection**
- **Multi-spark ignition: up to four ignition sparks per millisecond**
- **Energy management: on-demand control of the engine accessories**
- **ECO start/stop function: save fuel when stopped at traffic lights**

Under the bonnet of the new-generation CL, the most powerful Mercedes-Benz engines do service. The newly developed V8 biturbo engine in the CL 500 BlueEFFICIENCY opens up a new dimension of efficiency in the luxury class through the use of the innovative BlueDIRECT technology, the heart of which is the third-generation spray-guided direct petrol injection system featuring multiple injection. In the CL 600 the proven V12 biturbo engine with 5.5 litres displacement ensures refined and highly enjoyable travel.

### **CL 500 BlueEFFICIENCY: around 22 percent lower fuel consumption**

The new V8 biturbo engine in the CL 500 BlueEFFICIENCY und CL 500 4MATIC BlueEFFICIENCY produces **320 kW** (435 hp) with 15 percent less displacement (4663 instead of 5461 cc). It is around 12 percent more powerful than its naturally aspirated predecessor, which had an output of **285 kW** (388 hp). Whereas the latter engine got a combined NEDC consumption of 12.3 litres of premium petrol per 100 kilometres in the CL 500, the successor aboard the Mercedes coupé is content with 9.5 litres of fuel. This figure, outstanding in the luxury segment, means **fuel savings of 2.8 litres or around 22 percent**. CO<sub>2</sub> emissions also sink by around 22 percent from 288 grams per kilometre to 224 grams per kilometre – an excellent figure in this output category.

The NEDC fuel consumption of the all-wheel drive variant CL 500 4MATIC BlueEFFICIENCY is 9.9 litres per 100 kilometres (237 g CO<sub>2</sub>/km). This is 18 percent less than for the preceding model.

At the same time, maximum torque rises from **530 Newton metres to 700 Newton metres** – a 32 percent increase. The new V8 also attains top figures for specific output with **68.6 kW** and 150 Newton metres per litre displacement.

The maximum torque already is available from 1800 rpm, creating the precondition for an effortlessly superior display of power. This combines with a smoothness and quietness which is exceptional even for an eight-cylinder. The acceleration which the biturbo engine permits is also impressive: CL 500 BlueEFFICIENCY and CL 500 4MATIC BlueEFFICIENCY sprint **from zero to 100 km/h in 4.9 seconds** (predecessor: 5.4 seconds). Even more impressive is the figure for an 80 to 120 km/h sprint with kickdown – particularly important for safe overtaking on country roads. The CL 500 BlueEFFICIENCY needs 2.7 seconds for this (previously 3.1 seconds) and thus satisfies the condition for an especially relaxed and refined driving experience of a sporty character.

In the sum of its qualities the new BlueDIRECT V8 engine is unique in the luxury segment and plays in a new league. It obtains best values for fuel consumption, emissions and performance.

#### **A hard-charging doubles team: two turbochargers breathe the V8**

In the new V8, Mercedes-Benz engineers achieved a high output from a lower displacement primarily by using one turbocharger for each bank of cylinders. The intake air is forced into the eight combustion chambers at an overpressure of **up to 0.9 bar**, with the turbine blades rotating at up to 190,000 rpm. The turbochargers and their hot gas ducting are accommodated on the outsides of the cylinder heads. This enables the intercooler module with its air/water intercooler and charge-air distributor to be located inside the V of the engine – a solution which Mercedes-Benz engineers found to be advantageous following a long series of tests. This is confirmed by the output and fuel consumption figures achieved in practice.

The Mercedes-Benz engine designers configured the turbochargers to provide high torque even at low engine speeds. Compared to the previous engine, the result is an increase in torque at 2000 rpm by more than 45 percent. An outstanding 700 Nm is available between 1600 and 4750 rpm. The driver therefore perceives no turbo lag, but experiences the same pleasant and effortless performance from the new V8 as that delivered by a mighty, naturally aspirated 7-litre engine.

The engine is based on a diecast aluminium crankcase with aluminium/silicon cylinder liners. The developers adopted the basic and connecting rod journal diameters from the preceding engine, while raising the piston compression height for load reasons by just about 4 millimetres. By reducing the lift and shortening the connecting rod by two millimetres, it was possible to retain the interior height of the crankcase. Showing the high efficiency of the turbocharged V8, which is configured for premium petrol (RON 95), the compression ratio of 10.5:1 remains unchanged versus the naturally aspirated preceding engine.

#### **Key figures for the new V8 engine**

Number of cylinders/arrangement	8/V
Displacement (cc)	4633
Bore (mm)	92.9
Stroke (mm)	86
Compression ratio	10.5:1
Output (kW) at rpm	320 at 5250 rpm
Torque (Nm) at rpm	700 from 1800-3500 rpm

## **Great savings potential: innovative technology makes V8 engine fit for the future**

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The power plant of the CL 500 BlueEFFICIENCY is the representative of a new generation of BlueDIRECT V8 and V6 engines. The previous engine of the CL 500 provides the technical basis for the eight-cylinder. But almost all details were newly developed or intensively revised with the goal of fuel savings and high performance and smoothness. Crankcase, pistons and cylinder head are made of aluminium. Crankshaft, connecting rods and valves are manufactured from a special forged steel. With the new engine Mercedes-Benz clearly shows that uncompromisingly improved internal combustion engines still have great potential. The BlueDIRECT technology package of the new V8 units from Mercedes-Benz includes **new developments which are unique in their combination:**

- The third generation spray-guided direct petrol injection system with piezo injectors, in combination with multi-spark ignition, opens up further opportunities for optimising consumption through a homogeneous combustion process.
- In conjunction with the ECO start/stop function, shift point adjustment and specific friction-reducing measures, improvements in day-to-day fuel consumption by more than 20 percent are possible.
- The Mercedes designers have selectively reduced the power consumption of engine accessories. Among other things an optimised water pump with second-generation thermal management, a demand-controlled oil pump, a volume-controlled high-pressure fuel pump and an intelligent alternator management system find use.

With lightweight construction techniques and detailed improvements the Mercedes designers have also reduced in-engine friction considerably compared to the previous engine.

## **High precision: third generation spray-guided direct petrol injection**

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Spray-guided direct petrol injection, which Mercedes-Benz was the first car manufacturer to introduce in series production, in 2006, has been developed further by the Mercedes-Benz engine designers as a third-generation system in the BlueDIRECT technology package. The system pressure is maximum 180 bar in the V8, the pressure being variably optimised according to the engine's characteristic map. Completely newly developed piezo-electric injectors allow **up to five injections per intake stroke** for the best possible mixture formation.

The crystalline structure of the **piezo-ceramic** changes in microseconds under an electric voltage, and with a precision of just a few thousandths of a millimetre. The central component of a piezo-electric injector is the piezo-stack directly arranged in the high-pressure area. It controls the metering needle directly. With a **response time of just 0.1 milliseconds**, the fuel injection can be very sensitively and precisely adjusted to the current load and engine speed, with a beneficial effect on emissions, fuel consumption and combustion noise.

The multiple injections of smallest fuel quantities made possible by the piezo injection technique have been taken advantage of by the Mercedes-Benz engineers to control a larger useful engine characteristic map with the efficient lean-burn combustion method and to exploit the new "**homogeneous split**" (HSP) operating mode for the new BlueDIRECT V8 biturbo engine. In this homogeneous combustion process, more than 95 percent of the quantity is injected once or several times during the intake stroke. In addition, a very small ignition-supporting injection takes place to stabilise combustion. This is done in difficult combustion conditions.

## **Multi-spark ignition: best possible ignition, as need requires**

The third-generation direct injection system also features rapid multi-spark ignition (MSI). Following the first spark discharge and a brief combustion period, the coil is rapidly recharged and a further spark is discharged. The MSI system enables **up to four sparks** to be discharged in rapid succession **within one**

**millisecond**, creating a plasma with a larger spatial expansion than conventional ignition. Controlling this rapid multi-spark ignition enables both the time lapse before the next spark and the combustion duration for the relevant operating point to be optimally adjusted. This provides scope for optimising the centre of combustion and improving residual gas compatibility, especially during stratified charge operation. Fuel consumption can be reduced by roughly two percent in this way.

Depending on the driving cycle, fuel savings of up to four percent are possible alone by the use of piezo-electric injection technology in combination with multi-spark ignition.

#### **Less is more: low-friction unit**

The Mercedes-Benz engine designers paid particular attention to reduced in-engine friction in the new BlueDIRECT V8 power plant. They achieved their objective primarily by a reduction in flow through the oil and water pumps, low-friction pistons, piston rings and cylinder walls, plus a new thermal management system and a new chain drive.

#### **Intelligent design: cylinder head with new camshaft adjuster**

In its basic architecture, i.e. the valve angle, valve disc diameter, valve position, cam follower valve control and combustion chamber configuration, the cylinder head of the new V8 engine is identical to that of the previous engines. Mercedes-Benz engineers have, however, modified the variable, hydraulic vane-type camshaft adjusters for the intake and exhaust sides. These now have a larger adjustment range of 40 degrees with reference to the crankshaft. They were also able to improve the functionality, achieving a **35-percent greater adjustment speed** and adjustability at an oil pressure as low as 0.4 bar. Despite the better performance, this new development excels with significantly smaller dimensions and low weight. For this reason the installation space on the longitudinal and vertical axes of the engine was able to be reduced by around 15 millimetres.

The extreme compactness of the camshaft adjusters was achieved by the **new, two-stage chain drive**. This drives two secondary chains – one per cylinder bank – via a primary chain and an intermediate gear. All three chains can be individually adjusted via a chain tensioner. This results in low tensioning forces and low chain dynamics, ensuring consistent timing and outstanding acoustic properties, with **friction reduced even further**. In short, the new chain drive is compact and ensures low-noise operation.

#### **Efficient: controlled oil pump with two pressure stages**

A fourth chain drives a likewise completely newly developed, variable vane-type oil pump. It operates with two pressure stages, depending on the characteristic map. At low engine speeds and loads the pump runs at a low pressure of two bar. At this time the oil-spray nozzles for piston cooling are switched off. The high-pressure stage is activated at the upper load and engine speed levels. Thanks to this control concept, depending on engine load and engine speed the lubrication and cooling points of the engine can be supplied with **significantly lower drive energy** than would be possible with an uncontrolled pump.

#### **Intelligent: new coolant ducting and 3-phase thermal management**

The coolant ducting in the cylinder head is also completely new. The water mantle is of two-piece construction to improve flow. This leads to specific increases in flow speeds and heat dissipation at certain points, accompanied by a rigorous reduction in pressure throughout the coolant circuit. This has made it possible to reduce the power output of the water pump despite an increased engine output.

As it warms up, the flow of coolant is regulated by a 3-phase thermal management system so that it **rapidly reaches normal operating temperature**. Initially the coolant remains at rest in the engine. It then circulates in the engine circuit, but without the radiator. When a temperature of 105 degrees Celsius has

been reached in normal operation (87 degrees Celsius under high load), the vehicle's radiator is included in the circuit. The water supply to the interior heating system is separately controllable.

The Mercedes designers also managed to cut component weights by the concerted replacement of aluminium and steel by plastics in components like the thermostat, belt pulley, impeller, heater valve and hydraulic lines.

#### **Fuel-saving: ECO start/stop function with direct-start**

To reduce the fuel consumption of the V8 engine, the CL 500 BlueEFFICIENCY and the CL 500 4MATIC BlueEFFICIENCY get the ECO start/stop function which shuts off the engine when the car stops, for example at traffic lights. The system is a part of the **BlueEFFICIENCY package** of the V8 variants and is activated as soon as the car comes to a full stop with the driver depressing the brake pedal. When travel is resumed, the engine restarts immediately and almost imperceptibly as soon as the driver takes his foot off the brake pedal or presses the accelerator. Thanks to intelligent control, the heating and entertainment systems remain operating during the stop phase for maximum comfort, as does the automatic climate control. The ECO start/stop function does not switch the engine off if the operating temperature required for proper emission control or the interior temperature desired by the driver have not yet been attained.

In the two dynamic transmission modes "S" (Sport) and "M" (Manual) the ECO start/stop function is always deactivated. But the driver can also actively switch the system off. A yellow "ECO" symbol signals to the driver that though the ECO start/stop function is switched on, one of the mentioned criteria temporarily prevents the stopping of the engine. When all necessary conditions are met, the colour of the "ECO" symbol changes to green.

The start/stop system of the CL 500 BlueEFFICIENCY operates with **starter-supported direct-start**. This means that when the engine is switched off, the attitude of the crankshaft is registered by a new crankshaft sensor so that the engine control unit knows the positions of the individual cylinders. On restarting,

it can then select the cylinder that is in the most suitable position for first ignition. After the starter has briefly turned over the engine, reliable injection, ignition and combustion is immediately possible in the ideally positioned cylinder.

### **Energy recuperation: current from braking energy**

Efficient **alternator management** is also a part of the innovative BlueEFFICIENCY package of the CL 500 BlueEFFICIENCY and the CL 500 4MATIC BlueEFFICIENCY. When the battery is charged to more than 80 percent, the alternator is governed to take load off the engine. The energy required in this operating state is supplied by the battery. If the driver removes his foot from the accelerator pedal or applies the brakes in overrun mode, kinetic energy is recovered and fed to the battery. The experts speak of **recuperation**. In certain situations, for example during acceleration, the alternator is switched to no-load – that saves fuel.

### **Test marathon: more than seven million kilometres under the harshest conditions**

The new Mercedes-Benz BlueDIRECT V8 biturbo engines demonstrated their unlimited suitability for everyday use in extensive tests under most severe conditions. The engine and their accessories spent a total of **52,000 hours on the test bench**, including 27,000 hours of endurance runs. The wide-ranging programme comprised simulations of all imaginable driving situations and operating states such as hot and cold starts, stop-and-go traffic and full-throttle operation. Parallel to this the Mercedes-Benz developers undertook **strenuous tests in every climatic zone on earth** – in the winter of Northern Europe and the extreme heat of Death Valley (USA), in the thin air of alpine regions and in tropical jungles. Fast laps on the high-speed ovals of Nardo (Italy) and Papenburg (Germany) as well as stop-and-go driving in heavy city traffic completed the marathon testing. On balance, the test vehicles covered more than seven million kilometres under the most adverse conditions at maximum loads with the new V8 engine.

## **CL 600: high-performance engine with twin turbochargers**

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The flagship model remains the CL 600 with its **380 kW** (517 hp) twelve-cylinder biturbo engine, which accelerates the luxury coupé from a standstill to 100 km/h in impressive 4.6 seconds and in the new generation of the luxury coupé now also complies with the Euro 5 emissions control standard. Maximum torque is 830 Newton metres at 1800 rpm, which makes the 5.5-litre engine one of the world's most powerful series-production car engines. The V12 combines its impressive performance potential with exemplary smoothness and outstanding quiet running – the best possible preconditions for refined and highly enjoyable travel.

The crankcase of the twelve-cylinder engine is made from diecast aluminium, while diecast magnesium is used for the cylinder-head covers. Fracture-split or "cracked" conrods made from high-strength forged-steel alloy, pistons made from a high-quality aluminium alloy, hollow camshafts of induction-hardened forged steel, a weight-optimised forged-steel crankshaft and a diecast aluminium sump feature among the other lightweight components of the engine that were made possible by innovative material technologies.

On both sides, the turbines of the two turbochargers are integrated into the exhaust manifolds to save space, and are therefore in the best position for high efficiency. The compressed air flows through two close-coupled water intercoolers on the cylinder head covers. Depending on the engine load the air is cooled by up to 100 degrees Celsius, achieving just the right temperature and density for the combustion process.

The high-performance coupés **CL 63 AMG** with **400 kW** (544 hp) V8 biturbo engine (5.5 litres displacement) and **CL 65 AMG** with **463 kW** (630 hp) twelve-cylinder (6 litres displacement) are products of Mercedes-AMG. As option, for the CL 63 AMG the AMG Performance package can be ordered, in conjunction with which the output is increased to **420 kW** (571 hp).

## **Transmission: solutions for maximum driving pleasure and low fuel consumption**

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As standard the eight-cylinder engine is combined with the 7G-TRONIC PLUS seven-speed automatic transmission, which has been further improved in detail, while Mercedes-Benz combines the V12 engine of the CL 600 with a five-speed automatic transmission because of the extremely high torque which is already reached at low engine speeds. The DIRECT-SELECT lever on the steering column enables the driver to select "P", "N", "R" and "D" by nudging the selector. The operating commands are transferred purely electronically, by wire.

In addition, with a switch on the centre console the driver can choose between the driving modes "Sport" (S), "Economy" (E) and "Manual" (M), which alter the transmission characteristics.

- **Economy:** the automatic transmission changes gears at low revs; in this switch position the CL starts off in second gear. The ECO program is always active after the engine starts and supplants the previous "Comfort" mode.
- **Sport:** the automatic transmission makes the most of the engines' speed range when changing gears. At the same time the accelerator characteristics are changed so that the engine responds more spontaneously to the driver's pressure on the accelerator.
- **Manual:** the automatic transmission can be operated manually by steering wheel buttons. The shifting times are distinctly shorter even compared with the "Sport" mode.

Selection of the transmission mode is independent of the spring/damper setting of the suspension so that the driver is freer to determine the overall personality of the luxury coupé.

The 7G-TRONIC seven-speed automatic transmission was improved in detail by the Mercedes engineers. The aim was to further reduce converter slip in the connection with the engine and thus **optimise efficiency**. In addition, the much increased torque of the V8 biturbo engine in the CL 500 BlueEFFICIENCY raised new demands on the absorption of cyclic irregularities and vibrations in the transmission. The Mercedes-Benz developers achieved this aim in the new 7G-TRONIC PLUS with a new torsional vibration damper among other things. It is designed as a double turbo-damper and additionally fitted with a centrifugal pendulum which shifts the mass centre of gravity as a function of engine speed and enables comfortable vehicle operation even at lower engine speeds. Moreover, the optimal damping already makes a **distinct reduction in the slip** of the torque converter lockup clutch possible at low loads. The result: in ECO mode the engine speed could be reduced, contributing greatly to cut fuel consumption. Plus, it ensures an even quicker response to accelerator commands.

A new hydraulic circuit and optimised torque converter characteristics also help to improve efficiency and drive-away performance. As further consumption-cutting measure a new lower-viscosity automatic transmission fluid (ATF) is used which has a longer life but the same cooling performance. In future, the CL 500 BlueEFFICIENCY only needs a transmission fluid change every 125,000 kilometres.

The optimised electrohydraulic control unit of the transmission and new reduced-friction materials in various parts of the transmission in combination with optimised software result in **improved shifting comfort**. Owing to a separate ATF pump the 7G-TRONIC PLUS also can feature a start/stop function for the first time. This pump ensures readiness to move off when the fixed-displacement oil pump is not working because the engine is shut off.

## Perfect proportions

- **Appearance: modified radiator grille and new bumpers**
- **Headlamps: dynamic shape and Intelligent Light System**
- **Interior: two types of leather, four kinds of wood, five colour combinations**
- **Ambient lighting: light creates a pleasant sense of spaciousness**

For the new-generation CL the Mercedes-Benz designers were guided by their aspiration to technical and formal perfection. The demanding assignment posed to the Sindelfingen design team for the facelift was to further cultivate the visual impression made by the luxurious two-door car without impairing the essential features of the CL design idiom. The clarity and tranquillity of the styling of the CL is fascinating: no artificial flourishes, no exaggerated embellishment, no formal extras, instead a harmonious dialogue between tautly strung lines and large, calm surfaces. The design concentrates on essentials and in this way brings out the natural functional beauty.

### **Front section: giving shape to power and serenity**

To make the performance potential and the effortless superiority of the CL even more manifest, the Mercedes-Benz designers bestowed greatest attention on the front end. Bumper, radiator grille, headlamps, bonnet and wings were discreetly but effectively reworked. The styling measures applied to the front end lend even more impressive expression to the dominance and superiority of the coupé.

The Mercedes designers achieved the desired effect through, among other things, four concise longitudinal lines which give a taut shape to the bonnet, and through the **more strongly pointed radiator grille**. This stylistic artifice gives still more emphasis to the V-shape of the front – a sophisticated stylistic element symbolising the will to achieve and surge forward. The radiator grille itself is discreetly framed by thin chrome strips. Two individual louvres in brilliant silver

with a chrome trim strip in the CL 500 BlueEFFICIENCY, and two twin louvres, also chrome-trimmed, in the twelve-cylinder CL 600 lend further emphasis to the air of self-confidence. The centrally arranged Mercedes star creates a clear link to the grand coupé history of the Stuttgart motor manufacturer.

The modified front bumper injects another dynamic element into the appearance of the CL. Its distinguishing feature is a central cooling air opening which traces the contours of the grille and is flanked by two smaller openings for the brake cooling air. All three inlets have grilles, while the outer openings additionally are divided by chrome strips with a seven-piece **LED strip for the daytime running lamps**, which underscore the high-tech character of the model. Positioned far outward they also emphasise the breadth of the vehicle. This impression is reinforced by a chrome-look trim strip which runs virtually across the entire width of the vehicle underneath the cooling air openings.

### **Headlamps: merging aesthetics with high tech**

The redesigned headlamps are one of the most impressive details of the Mercedes coupé. The stylish cut of the headlamps and their curved upper edge accentuate the V-shape of the front end. They also function as visual links, bringing together the front and side design and thus conducing to a harmonious overall impression. Technically, they offer the most up-to-date headlamp technology in the form of the standard-fit **Intelligent Light System (ILS)** and the **Adaptive Highbeam Assist**. The bi-xenon modules are framed in high-sheen cylinders that look like up-market camera lenses. They thus convey qualities like precision, high value and high tech. The foglamp, previously located in the front bumper, is now integrated in the ILS projection module. The cornering light arranged next to it features LED technology. The additional LED strip on the outer edge of the main headlamps for indicator and position light creates a distinctive accent. Together with the dimmed daytime running lamps this produces an **unmistakable night design**.

Together with the very expressive lights the CL has been given **redesigned front wings** whose powerful curves trace a long arc from the headlamps to the A-pillars and create an expressive light-catching contour at the transition to the bonnet.

An example of good form and perfect function are the exterior mirror housings. Optimised through intensive fine-tuning work in the wind tunnel, the shape has the effect that the side windows hardly get soiled in adverse weather, and wind noise – especially from crosswinds and when overtaking trucks – is largely eliminated.

### **Rear end: a powerful final statement**

The modified tail lights of the tautly drawn rear end catch the eye. Their **all-red lenses** make them appear larger and more dominant than in the previous model, despite having an identical shape. As a further characteristic, the lights take up the flow of the lateral character lines with a discreet ridge and contribute in this way to the tautness of the design. The reversing lights in the new-generation CL are located to the right and left of the number plate recess on the boot lid and take up the V-shaped run of the lid's joints.

The discreetly redesigned rear bumper, with its light-catching contour blending into the vehicle flanks and visually extended by a swage line running into the flared wings, likewise underlines the high design quality. At the same time this feature emphasises the dynamism of the CL, suggesting the safety and solidity of its stance on the road. This impression is heightened even further by a chrome trim strip between the exhaust tailpipes. In future the trapezoidal exhaust tailpipes themselves are visibly integrated into the bumper trim. The twelve-cylinder CL 600 is immediately recognisable by the distinctive look of its tailpipe.

The rear end of the CL is proof of the Mercedes designers' striving for perfection in another respect too: the aerials for the navigation system and telephone can be invisibly integrated into the boot lid, which is fashioned from plastic. The advantage: no irritating aerial mountings mar the lines of the vehicle.

New light-alloy wheels likewise make for a unique mix of dynamism and elegance. The V8 models CL 500 BlueEFFICIENCY and CL 500 4MATIC BlueEFFICIENCY are factory-fitted with redesigned 5-spoke 18-inch wheels. The twelve-cylinder CL 600 also has 5-spoke 18-inch wheels as standard. A survey of the standard equipment and optional extras:

### **5-spoke design:**

- 8.5 J x 18, 255/45 R 18 (standard in the CL 500 BlueEFFICIENCY)
- 8.5 J x 18, 255/45 R 18 at the front; 9.5 J x 18, 275/45 R 18 at the rear (standard in the CL 600)
- 8.5 J x 19, 255/40 R 19
- 8.5 J x 19, 255/40 R 19 at the front; 9.5 J x 19, 275/40 R 19 at the rear

### **7-twin-spoke design:**

- 8.5 J x 18, 255/45 R 18
- 8.5 J x 18, 255/45 R 18 at the front; 9.5 J x 18, 275/45 R 18 at the rear

### **15-spoke design:**

- 8.5 J x 18, 255/45 R 18 at the front; 9.5 J x 18, 275/45 R 18 at the rear (standard in the CL 500 4MATIC BlueEFFICIENCY)

### **20-spoke design:**

- 8.5 J x 19, 255/40 R 19 at the front; 9.5 J x 19, 275/45 R 19 at the rear

## **Interior: solid luxury with fine materials**

The Mercedes-Benz designers also perfected the interior of the CL, making a decisive contribution so that the Mercedes model remains the yardstick for luxury and value in its class. Perfectly matched materials further enhance the classy look. The specialists for interiors at Mercedes-Benz use first-rate materials like aluminium, leather and wood which they process with great attention to detail. Most of the wood parts are **hand-made** and matched individually for colour

and grain by experienced craftsmen. Everything is perfectly coordinated: shape, colour, materials. In the Mercedes-Benz CL only European wood from **renewable forestry sources** is used. A total of **four different kinds of wood** are available: apart from light and dark high-gloss burr walnut, there is brown high-gloss poplar (CL 600) and black ash. Thanks to a special coating method, each piece of wood trim gets a brilliant surface which particularly brings out the individual grain of the fine wood.

The seat covers of the new CL also are of the most exquisite quality. For this luxury model there are **two different kinds of leather** available which thanks to their low pre-tensioning and consequent wrinkle effect appear supple and comfortable from the very first glance – a pleasant experience, visually and for one's sense of touch. In the "Exclusive PASSION leather package" (standard in the CL 600), in addition the dashboard, the centre console, the ruffled pockets on the backrests of the front seats, the door panels and parcel shelf are covered with fine leather. In choosing the raw material Mercedes-Benz pays attention to exquisite quality: the leather for seat covers and steering wheel comes exclusively from southern German bulls mainly kept in sheds so that the hides show no flaws due to tick and insect bites or injuries caused by pasture fencing.

In addition, in the CL 600 and in the top "Exclusive PASSION leather package" the clothing of the roof liner and the interior trim of the A and C pillars in high-grade Alcantara leather completes the fine combination of materials.

There is a choice of **five tasteful colour combinations** for the vehicle interior of the Mercedes-Benz luxury coupé: black/black, cashmere beige/savannah beige, sahara beige/black, and the novel combinations alpaca grey/basalt grey and aubergine/black.

### **Steering wheel: high tech and hand finish**

The discreetly modified steering wheel with a total of twelve control buttons and shift paddles catches the eye as soon as one gets into the car. Steering wheel rim and airbag module in the new-generation CL are lined with **soft nappa leather** as

standard. The new, flatter airbag module lends a sportier touch to the multifunction steering wheel. Alternatively, the customer can order a wood/leather steering wheel (standard for the CL 600). Covered in leather sewn with sophisticated double stitching, the steering wheels of the CL captivate not only through the selection of fine materials, but also the excellent grip they afford. The optional steering wheel heating guarantees this feeling even after a night outdoors at freezing temperatures. The multilayer structure of the steering wheel also ensures the best safety. The core is a skeleton made of aluminium. On this metal base a special foam is sprayed. In the wood/leather steering wheel this is covered with half-shells of real wood veneer. Steering wheel frame and wooden covering deform in a defined pattern in the event of a crash so that there is no danger of splinters. The uncompromising Mercedes safety philosophy also finds expression in the sewing of the airbag module. This is done by hand, but electronically monitored. The data of every CL steering wheel is saved for at least 15 years.

### **Ambient lighting: choice of three shades**

Apart from this, with **ambient lighting** (standard for the CL 600) Mercedes-Benz makes more use of light as a styling element in the new-generation CL to make the occupants' stay on board as pleasant as possible. Along with the lighting mood "solar" in a warm amber tone, with the COMAND Controller the customers can choose between neutral (white) and polar (ice-blue). The ambient lighting makes use of thin optical fibres behind the trim on the dashboard and door panels. Their indirect light can be dimmed in five stages by means of the COMAND system. The pleasant sense of spaciousness in the luxury coupé also can be experienced at night owing to the surrounding band of light. What is more: the light keeps the driver awake and lights up his or her mood, improving driver fitness as a result.

A sophisticated lighting concept in the CL 500 heightens the sense of wellbeing in the dark. In addition to the indirect lighting of the switches and controls, there are lights in the door handle recesses and footwells that create a pleasant, amber-coloured lighting effect. A light-emitting diode in the housing of the rear-view

mirror is directed at the centre console as another component of the interior lighting system. The diffuse light can be individually adjusted with the aid of a selector in the instrument cluster. The brightness of the footwell illumination automatically is reduced after closing the doors.

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## Concert hall and conference room

- **Seats: maximum comfort with memory and massage function**
- **Ergonomics: all controls located in the right place**
- **Cockpit: up-to-date display concept with brilliant colour reproduction**
- **Infotainment: COMAND and COMAND APS with even more functions**

Along with fine materials, beautiful forms and pleasant colours, excellent seating and climate comfort, intelligent operation and state-of-the-art infotainment systems are important attributes of an automobile which is mainly at home over long distances and should offer its occupants the most in terms of luxury. With actively ventilated seats whose backrest and seat cushion contours can be adapted to the driver's individual anatomy, a powerful four-zone automatic climate control with individual setting for the footwell, and intuitively comprehensible man-machine interfaces, the CL meets these requirements in a perfect manner.

The front seats of the Mercedes-Benz luxury coupés are designed as so-called **integral seats**. All components of the belt system are fitted directly to the seat: the inertia reel with belt force limiter, the automatic comfort-fit feature, the belt buckle and the upper guide point for the belt. This ensures that the seat belt fits optimally in any seat position and thus can develop its full protective effect. It makes the seats important components of the occupant protection system. In a crash they resist highest loads thanks to sturdy seat rails made of extruded aluminium sections and a complex, weight-optimised welded structure made from high-strength steel sheet.

With individually adaptable backrest and seat cushion contours, active ventilation and a massage function, the integral seats of the CL enhance the personal wellbeing of the car occupants on long journeys. A team of experts who work closely together with orthopaedists and physiotherapists is responsible for their development.

In the CL 500 BlueEFFICIENCY a **twelve-way seat** offers the driver and front passenger first-class comfort. The fore-and-aft position, backrest and cushion angle, seat height, head restraint and seat cushion depth are electrically adjustable – independently and variably, so that each occupant is able to choose the best individual seating position. To support the lumbar region of the spinal column these seats have pneumatic, two-way lumbar supports. With their help, driver and front passenger can adapt the backrest contour to the anatomy of their backs and so reduce muscle strain. So that the optimal seating position does not have to be changed for another driver or front passenger after being found, the CL is equipped with a **memory function** as part of the Memory package as standard. Three memory settings can be stored for both the driver and front passenger.

The technical design of the seats of the CL meets highest quality standards. That means: sine springs with polyurethane foam padding in the seat cushion and Pullmaflex spring mat with breathing natural-fibre rubber hair padding in the backrest. In close union with the suspension and body the sophisticated design makes it possible to offset most of the vibrations which can impair wellbeing particularly on long journeys.

The choice of materials and the structure of the CL seats ensure comfort in all weathers and at all temperatures. A perfect seat climate is ensured, for example, by the breathable composite material and the high-quality leather covers. Background: in spring and summer interior temperatures of over 30 degrees Celsius can be measured in cars after brief periods of sunshine so that the occupants quickly work up a sweat after getting in. Since a quarter of the body has contact with the car seat, the seat should be able to absorb and carry off moisture.

## **Active multicontour seats: lateral support to suit the driving situation**

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The ultimate in seating comfort is offered by the **active multicontour seats** in the CL 500 4MATIC BlueEFFICIENCY and CL 600: the occupants can adapt the shape of the seat to their anatomy or their personal comfort needs. This is ensured by nine inflatable air chambers under the upholstery padding, including two for the lumbar region and two for the shoulder area.

In addition, distributed piezo valves on the air chambers which respond quickly to steering movements make the **dynamic function** of the active multicontour seat possible. The pressure and volume of the air chambers in the side bolsters of the seat backrests are adjusted according to the steering angle, lateral acceleration and speed of the car in order to offer the driver and front passenger even better lateral support. The chambers respond to the driving situation in hand, the system pumping more air into the chambers on the right-hand side of the backrest in left-hand corners, for example, while the left-hand chambers are given extra air through right-hand bends. This active function relieves stress on muscles and thus enhances wellbeing and safety.

## **Sheer relaxation: special air cushions to massage the back**

The Mercedes-Benz luxury coupé is made the ultimate measure of seating comfort in its class by the **massage cushion** in the backrest of the active multicontour seats: a microcomputer inflates and deflates the cushions in seven separate air chambers in such a way that the passengers sense a pleasant rolling movement across their backs. It stimulates the muscles, improves circulation and counteracts premature fatigue. Four programs can be selected for the purpose. They can be restarted any time after completing a cycle. Four massage programs are available: from "slow and weak" to "fast and powerful". For their regenerating action the active multicontour seats with massage function have been awarded the quality seal of the German "Healthy Back Campaign".

But with that we still haven't reached the end of the line in matters of comfort. The active multicontour seats additionally are **actively ventilated**: four mini

ventilators in the seat cushion and two fans in the backrest extract cool air from the floor area of the interior and distribute it evenly through a ventilation tissue beneath the seat surface. The mild airflow cools the seat surface within minutes and can prevent the car's occupants from sweating, even when it is extremely hot outside.

The pneumatics of the active multicontour seats work quietly, quickly and precisely thanks to high-performance piezo valves, such that the seats can be integrated into the PRE-SAFE<sup>®</sup> anticipatory occupant protection system: if the PRE-SAFE<sup>®</sup> system identifies a critical driving situation, it activates the air cushions of the seat backrests in a split second. They embrace the vehicle occupants and support them in such a way that in the event of an accident the dangerous whiplash forces of the upper body can be reduced. The protective action of the sidebag can be even stronger because of this.

**Climate control: four temperature zones ensure individual comfort.**

Maximum individual adaptation of the vehicle to the different comfort requirements of occupants also is made possible by the standard-fit automatic climate control, which has four separately regulated temperature zones for driver and front passenger.

- The two lower zones correspond to the air vents in the front and rear footwells and the two central vents in the rear.
- The upper temperature zones include the vents in the centre of the dashboard and the defroster outlets on the driver's and front passenger side of the car.

Whereas conventional air conditioning systems work according to pre-programmed stratification of head and footwell temperatures, the zone concept in the CL now allows continuous adjustment of the temperature stratification inside the car. Flaps in the climate control unit are responsible for regulating the temperature in the four zones, ensuring a mixture of cold and warm air and thus controlling the desired outlet air temperatures.

A total of 15 electric motors control these cold and warm-air flaps in the mixture zones and the air outlet flaps for the vents. Page 54

In addition, the automatic climate control offers a number of other possible individual settings which the driver and front passenger can select with the aid of the COMAND Controller and the COMAND display. Example footwell temperature: the system offers five stages whose settings specifically alter the temperature of the air flowing into the footwells. Since climate-related wellbeing very strongly depends on personal perceptions, the CL's system operates according to individual specifications and wishes, even in automatic mode. And so in addition to the separately adjustable footwell heating there are three different ventilation modes to choose from; the driver and front passenger set them with the COMAND Controller.

- The setting "**Diffuse**" is designed to deliver the lightest possible airflow. The cooled or warmed air is not channelled directly towards the passengers, but flows predominantly out of the defroster vents in the dashboard, the air outlets in the footwells and from the direct ventilation level.
- In "**Focus**" mode, meanwhile, the air outlets in the centre area of the dashboard are used for the most part, meeting the need for a direct flow of a larger quantity of air.
- "**Medium**" mode is equivalent to the standard automatic mode on a Mercedes air conditioning system.

To further enhance individual comfort, apart from temperature and air distribution the air conditioner of the CL affords the possibility of separate settings for air volume on the left and right side. All it takes is the push of a button on the operating panel on the dashboard or an input into the permanent climate menu line on the COMAND display.

The automatic climate control system of the CL is controlled by a total of eight climate sensors: as well as outlet air temperature sensors, the central temperature sensor, the solar sensor and the evaporator sensor, the system uses a dew point sensor. Working in conjunction with the fully variable refrigerant compressor, this humidity sensor allows the system to respond as required. Intake air is first cooled according to its humidity, then dried and heated to the desired temperature. The air conditioning system works far more efficiently than conventional systems and offers higher levels of comfort.

A demisting sensor detects the beginning formation of moisture on the inside of the windscreen and regulates the automatic climate control accordingly. The sensor is interlinked with the engine management and, when required, prevents undesirable shutdown of the engine by the ECO start/stop function in the eight-cylinder models. So the air conditioner compressor always runs for a sufficiently long time during stop-and-go operation to ensure clear vision. In addition, in wintry conditions the demisting sensor also recognises the increased need for air drying – for instance when four persons in wet skiwear are sitting in the car – and adjusts the automatic climate control accordingly.

In addition, the automatic climate control of the CL is fitted with a pollutant sensor, which measures the amount of carbon monoxide and nitrogen oxide in the outside air. If pollutant concentrations rise beyond a certain level, the air conditioning system switches automatically to recirculation mode. In fresh-air and recirculation modes, two combined filters arranged in a "V" are permanently in use. These absorb pollutants, separate out plant pollen and dust particles and reduce irritation for the passengers caused by odours.

To ensure a **consistently smooth flow of air** and avoid increasing the atmospheric pressure in the interior, the fan of the automatic climate control is automatically throttled at road speeds higher than 160 km/h. Also, if the intelligently networked sensors register the closing of a car door by the driver or front passenger, the blower speed is reduced by as much as 60 percent. The air pressure in the interior falls and the large coupé doors close more easily. For the same reason the recirculation air flap of the automatic climate control remains open for 90 seconds after the doors are opened. Another clever detail: the rear window heater is not activated until the interior temperature reaches five degrees Celsius so that at extremely cold temperatures the luxury coupé can save energy during the cold-running phase.

### **Control concept: everything in just the right place**

Comfort is also a question of the control concept. In the CL the Mercedes developers have clearly and logically grouped the controls. One major characteristic is the rapid access to frequently used functions. Accordingly, the control system is designed for redundancy: the radio, CD/DVD changer, telephone and navigation system can be accessed either via the new COMAND Controller and its menu structure, or directly using keys. The relevant control keys are ergonomically located in front of the controller, so that the driver can operate them by feel without taking his eyes off the road. The "Return" key takes the driver back to the next-higher menu level; pressing this key longer provides access to the highest control level.

Operation of the automatic climate control system is also possible in two ways, i.e. on a redundancy basis: using the COMAND Controller and menu-based control via the colour display, or by means of an attractively styled switch array beneath the air vents. The COMAND system then allows further individual climate adjustments such as air distribution and footwell adjustment.

The central control of the control and display system COMAND is the COMAND Controller. This turn/push control can be moved in eight directions: turning the controller selects the main menu and submenus on the generously dimensioned

COMAND display with an eight-inch (about 20 centimetres) screen, while pushing it accepts the displayed functions. The buttons marked with symbols in front of the controller are used to quit submenus quickly or delete entries.

Functions for the seat and climate settings which tend to be used less frequently in practice also are integrated into the central COMAND control system. To visualise the different display areas the Mercedes-Benz experts developed photo-realistic illustrations which clearly and very comprehensibly support the specific operations.

The Sindelfingen-based experts have grouped together other functions, for which switches and buttons are still the most effective solution, into functionally related control clusters. These control clusters can be found in the CL in the door trim, instrument panel and roof lining. The principle behind the modifications is "everything in just the right place".

### **The display technique: the LCD TV as model**

The displays in the instrument cluster and the standard control and display system COMAND are modelled after modern LCD television screens with LED backlighting. The result is brilliant colour reproduction and crystal-clear images. As another advantage, the displays can be viewed from extreme angles with no colour distortion. The displays are black when the ignition is off. As new feature the Mercedes-Benz developers have integrated the warning and control lamps of the driver assistance systems and the display that shows current fuel consumption and operating range into the instrument cluster.

In the centre of the display a graphically animated speedometer appears as a dial-type gauge. Its needle is partly dissolved in order to emphasise the information of the central display placed in the middle. The graphics computer projects a text line onto the lower edge of the display for controlling as many as seven main menus (depending on equipment) and various submenus for individual settings, displays and operating functions.

<b>Trip</b>	Odometer and trip recorder, trip computer, range, fuel consumption, digital speedometer
<b>Navi</b>	Directional instructions (indicated by arrows) of the navigation system
<b>Audio</b>	Radio programme, TV programme, title display for CD player, CD changer, Video DVD, USB stick, SD card and MUSIC REGISTER ...
<b>Phone</b>	Number dialled, caller number, telephone directory
<b>Assistance</b>	Proximity graphics for DISTRONIC, proximity warning, Attention Assist, ESP <sup>®</sup> , setting of Speed Limit Assist, of Active Blind Spot Assist, of Active Lane Keeping Assist and PRE-SAFE <sup>®</sup> Brake,
<b>Service</b>	Tyre pressure monitoring system, ASSYST PLUS, service messages
<b>Settings</b>	Daytime running lamps, additional digital speedometer, SPEEDTRONIC, Intelligent Light System, Adaptive Highbeam Assist, acoustic locking confirmation signal, activation of radar sensors

Circular, illuminated five-way buttons on the multifunction steering wheel which the driver operates by light thumb pressure serve the rapid selection of these settings and functions. The relevant selection or setting is confirmed by pressing the "OK" key at the centre of the disc. A separate "Return" key enables the driver to return to the next-higher menu level immediately – this too an example of the intelligent control concept of the CL.

The five-way button on the right of the multifunction steering wheel is used to regulate the sound volume and operate the car phone. Below this there is an additional button with which the driver can activate the LINGUATRONIC voice-operated control system (part of the Navigation package, standard for the CL 600). A few verbal commands are then enough to operate the car phone, audio equipment and navigation system.

### **SPLITVIEW: two programmes on a single screen**

Mercedes-Benz also uses a new display technology for the optional **SPLITVIEW** system for the COMAND control and display system (part of the Front Seat

Entertainment package, standard for the CL 600). This innovative display concept allows the driver and front passenger to view different content simultaneously on one and the same screen. While the driver, for example, uses the map-based navigation system, the front passenger can be watching the latest film on DVD. For this purpose the SPLITVIEW option includes a remote control unit and wireless headphones. Page 59

The COMAND screen has a backlit active matrix colour display (TFT-LCD) in combination with SPLITVIEW. This shows two different images simultaneously by placing pixels adjacent to each other. A filter masking the display divides this mixed image in such a way that depending on the seating position, only the pixels making up one or the other image can be seen. As a result, the driver and front passenger can view different programmes on the same screen at the same time.

The driver still has access to all the information from the control and display system in the display. The front passenger is able to choose his own entertainment programme with video DVDs, music videos or TV channels.

### **Multimedia interfaces: top-notch convenience for telephony and entertainment**

Mercedes-Benz has also added additional functions to the COMAND system. The multimedia head unit with a radio, telephone operation and a CD/DVD player gets a **Bluetooth® interface and a USB interface**. The two make it possible for customers to transfer their personal address book from a mobile phone or organiser to the control and display system, where it can be stored for immediate access during a journey. Stored data can also be exported and imported into any other vehicles or multimedia devices.

From the S-Class Saloon, as standard the Mercedes-Benz luxury coupé additionally gets the slot for SD memory cards in the centre console.

As optional extra Mercedes-Benz integrates the **Media Interface** into the glove compartment – an interface for connecting mobile audio devices like the iPod® with a control unit that links the external music memory to the onboard electronics and the coupé's control systems. The advantage of this is that the titles of the tracks stored on the iPod® can be shown on the colour display in the dashboard and in the instrument cluster, allowing them to be selected almost effortlessly using the COMAND Controller or the buttons on the multifunction steering wheel. The battery in the audio device is also charged while it is connected to the car via the Media Interface.

#### **Music Search: specific search for a favourite music track**

Greatest convenience also is afforded by the new, standard-fit Music Search function, which enables drivers and passengers to search SD memory cards, USB sticks, CDs and DVDs for specific music tracks and artists. The search can be according to various criteria, for instance album, music category or composer. If a name needs to be entered, the software will also tolerate spelling mistakes. The driver is therefore able to devote his full attention to the road. As a further advantage, the occupants are able to search all the connected media and devices simultaneously

#### **COMAND APS: HDD navigation for a swift arrival**

The COMAND APS infotainment system (standard for the CL 600) offers still more high-tech electronics. The multimedia terminal includes a Europe-wide navigation system whose data are stored on a 40-gigabyte hard drive, allowing even faster route calculations compared to DVD-based navigation. The high-resolution map appears on the 8.0-inch colour display in the centre of the dashboard and provides useful additional information.

By way of example, the map shows speed limits and the outlines of prominent buildings along the route to aid orientation.

With COMAND APS, information from a personal address book also can be used for navigation purposes, giving mainly professional high-mileage drivers a decisive advantage. Depending on how the personal address list is structured, the route search is made by phone number or name.

Helpful for navigation purposes is also the new phone keypad under the armrest for the COMAND Controller, which becomes standard equipment upon the model change. It offers driver and passengers the additional option of entering personal points of interest and navigation data as well as radio frequencies.

### **Voice-operated control: whole-word voice input for navigation, telephone and radio**

In the CL Mercedes-Benz combines COMAND APS with the voice-operated control system LINGUATRONIC and a so-called **text-to-speech function** as part of the Navigation package. This makes it possible for route-related traffic reports, SMS messages, address book entries or radio station names to be read out to the driver. The system automatically reads out traffic reports that are relevant to the current route.

Mercedes-Benz is among the inventors of modern voice control systems, and has continuously developed its LINGUATRONIC system further in recent years. The navigation system in the CL can now be operated on the basis of whole-word commands, for example: the driver no longer needs to spell out countries, towns or street names, but can simply say them as a whole word. The voice control system is equally convenient when selecting radio stations or entries from the telephone directory: all the available or stored names can be called up without previously training the voice recognition system. The system also has a stored list of synonyms. For example, the driver does not necessarily have to confirm entries or commands with "Yes", but can also say "Ok", "Right", "Good" or "Correct" instead. A special filter suppresses coughing or clearing the throat, so that a voice command does not need to be repeated. LINGUATRONIC also understands variations in tone and pronunciation due to dialects.

## **MUSIC REGISTER: memory for 2500 tracks**

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For musical entertainment the Navigation package of the new-generation CL includes a radio, a CD/DVD player with MP3 function, an equalizer with speed-dependent volume control and the MUSIC REGISTER with a **7.2 gigabyte hard disc** which stores around 2500 digital music files in the MP3, AAC or WMA format that can be transferred to the Register from PC memory cards or USB sticks. The system recognises music files played on CD, DVD or from the MUSIC REGISTER using its stored **Gracenote® database**, and shows the title, album and performer in the colour display.

With an improved **DAB tuner** (DAB = Digital Audio Broadcasting) and additional aerials (optional), the occupants of the CL can also receive digital radio stations in CD quality. The system switches to analogue reception automatically when the DAB signal is too weak. In North America the Mercedes-Benz luxury coupé is equipped with a tuner for the digital HD radio as standard.

## **Convenience Telephony: luxury coupé becomes a conference room on wheels**

Mercedes-Benz specialists have also added new functions to the Convenience Telephony option (standard for the CL 600). The driver and passengers are now able to conduct **telephone conferences** and send or receive SMS messages. Whereas the basic telephony system connects the mobile phone to the control and display system via Bluetooth®, Convenience Telephony connects the mobile phone to the vehicle via a telephone cradle housed in the compartment beneath the centre armrest. This interface enables the phone to be connected to the vehicle aerial, and its battery is also charged during the journey.

## **Surround sound system: perfect music enjoyment in 3-D quality**

Music enjoyment on a high live-concert level is offered by the Harman Kardon® Discrete Logic7® **surround sound system**, which is perfectly adapted to the interior of the CL (standard in the CL 600). Developed by Mercedes-Benz together with the audio specialists from Harman Kardon®, this high-end system delivers a

natural 360-degree musical experience for all passengers, from both DVD and CD and regardless of whether the source was recorded in 5.1 surround or normal stereo. The audio signals are distributed via a 600-watt amplifier connected to 14 high-performance loudspeakers. Mercedes-Benz offers the surround sound system together with SPLITVIEW und a 6-disc DVD changer as part of the Entertainment package (standard in the CL 600).

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## Attentive assistants

- **Active Blind Spot Assist and Active Lane Keeping Assist**
- **ATTENTION ASSIST: warns of drowsiness**
- **Speed Limit Assist: shows the currently permitted speed on the display**
- **Adaptive Highbeam Assist: the optimum light settings, automatically**
- **DISTRONIC PLUS: keeping a safe distance with the help of radar**
- **PRE-SAFE® Brake: "electronic crumple zone"**

Along with the proven technologies ABS, ESP® and Brake Assist, in the new-generation CL a dozen or so newly developed or improved driver assistance systems help to avoid accidents or reduce their severity. They make the luxury coupé an "intelligent" partner which is able to "see", "feel" and act "on its own initiative". With this concept, the Mercedes-Benz model protects not only its occupants, but can do much to make the road safer for other users too.

The trailblazing driver assistance systems, unique in the luxury coupé segment, are based on cutting-edge radar, camera and sensor technology. They are geared to frequent causes of accidents such as failure to maintain a safe distance, drowsiness and darkness. As world firsts the Active Blind Spot Assist and Active Lane Keeping Assist will find use, simultaneously with their introduction in the S-Class.

### **Active Blind Spot Assist: course correction through brake actuation**

An example of an ultramodern radar-based assistance system is the Active Blind Spot Assist which Mercedes-Benz offers for the CL as part of its Driving Assistance package. The system warns the driver if it detects a risk of collision when changing lanes. **Short-range radar sensors** housed on both sides of the rear bumper monitor the areas directly alongside and behind the car.

This process enables them to see if there is another vehicle in the next lane – in the so-called blind spot. In such situations, the system informs the driver by illuminating a **red warning signal in the glass of the exterior mirror**. If the driver fails to see this warning and indicates to change lanes, a warning signal sounds as well.

A novel feature of the system in its latest development stage: if the driver ignores the warnings and comes dangerously close to a vehicle in the neighbouring lane, the Active Blind Spot Assist reacts with a **corrective braking intervention** via the Electronic Stability Program® on the wheels of the opposite side of the vehicle. The result is a yaw movement of the CL, caused by the unequal distribution of the braking forces, which counteracts the collision course. At the same time a display in the instrument cluster informs the driver. If despite this change of course an accident cannot be avoided, the Active Blind Spot Assist system can reduce the consequences of a collision through the course correction. If the system detects vehicles or obstacles at close quarters on the other side of the vehicle too, it adjusts the braking action accordingly. For this purpose the Active Blind Spot Assist also makes use of the front sensor data of the DISTRONIC PLUS proximity control. Both systems consequently are available as part of the Driving Assistance package.

Brake actuation to correct the course occurs between 30 and 200 km/h. The effect is limited to longitudinal and latitudinal deceleration of  $2 \text{ m/s}^2$ . The system is intuitively deactivated as soon as the driver corrects his steering because of the brake intervention or accelerates the vehicle. When ESP is in OFF mode, Active Blind Spot Assist also is switched off. The visible warning in the exterior mirror is active up to a speed of 250 km/h.

### **New: Active Lane Keeping Assist with ESP® support**

In the new-generation CL the Active Lane Keeping Assist is now also linked to the ESP® for the first time. This system kicks into action if the Mercedes coupé inadvertently drifts over a **solid line to the right or left** of a lane. In this case, Active Lane Keeping Assist uses the ESP® to brake the opposite wheels and

thereby prevent the vehicle from crossing the line. A display on the instrument cluster warns the driver at the same time. If broken lane markings are crossed, the system controls an **electric motor in the steering wheel** which generates **brief vibrations** – a discreet but highly effective cue to countersteer immediately. Before the braking system intervenes, the steering wheel always vibrates to provide a warning. The **course-correcting brake application** is active between 60 and 200 km/h.

The heart of the Active Lane Keeping Assist, which also is offered as part of the Driving Assistance package, is a camera on the inside of the windscreen. It is able to **recognise lane markings** by analysing the difference in contrast between the road surface and the boundary lines. The image processor informs an electronic control unit which determines and detects the position of the vehicle if it drifts out of this lane to the left or right. For maximum reliability, the new generation of Lane Keeping Assist also evaluates radar signals in addition to image processing. Only when both lane algorithms concur is braking force applied to correct the course.

Unlike conventional systems of this type, the intelligent Mercedes assistance system also assesses the behaviour of the driver and is therefore able to determine according to the situation whether the vehicle is leaving the registered lane intentionally or unintentionally. For example, the system recognises when the driver is accelerating before overtaking or joining the motorway, is deliberately cutting a corner, is moving back into the original lane after overtaking, or is actively correcting his steering. In this case the driver feels no warning in the form of steering wheel vibrations.

Furthermore, Lane Keeping Assist is deactivated immediately if ABS, ESP<sup>®</sup>, Brake Assist or another active safety system intervenes.

Intelligent electronic image processing is also the basis for the **Speed Limit Assist**, used for the first time in the CL and available as part of the Navigation package (standard for the CL 600). This assistance system, presented in the Mercedes-Benz E-Class and the S-Class saloon in 2009, reminds the driver of the current speed limit. The detected speed limit is shown on a display in the instrument cluster and in the map display of the navigation system, and remains visible until no speed limit applies or a different speed limit is registered – an important contribution to safety, as unsuitable speeds are the cause of most, and the most serious, accidents worldwide.

A windscreen-mounted camera continuously monitors the area in front of the coupé. A computer scans the camera image for round surfaces only and then highlights these. As a next step, a system of algorithms filters out all objects that are round but do not resemble traffic signs. Finally, a comparison with stored patterns eliminates all but those objects which the system is programmed to detect: **round traffic signs indicating the speed limit**. The symbols are sent to the instrument cluster and the map display of the navigation system, meaning that the driver is always aware of the current speed limit and can adjust the car's speed accordingly.

Some of the speed limit signs in Europe – for example those seen when entering or leaving towns – are rectangular, however. In such cases, the assistance system also scans the data stored on the **digital map of the navigation system** in the COMAND APS control and display system to check the plausibility of the camera image. For example, the last speed limit detected disappears from the display in the instrument cluster as soon as the car enters a built-up area. If there are no traffic signs with speed limits, again the Speed Limit Assist falls back on the data stored in the navigation system.

In its most recent version the Speed Limit Assist additionally recognises important signs and information which qualify a speed limit, for example making it applicable only to trucks. In this case the traffic sign does not appear on the

instrument cluster. Moreover, the system recognises signs which cancel a speed limit. For smaller daytime roadworks, for example, if there is no sign cancelling a temporary speed limit after the specified distance, the speed limit stored in the navigation system automatically is shown in the instrument cluster. This interlinkage of navigation system and Speed Limit Assist is a major advantage over a retrofit solution.

Thanks to the huge advances made in computer-based image-processing technology, Speed Limit Assist is able to work in **real time**, analysing the images within a fraction of a second so as to provide the driver with the required information very rapidly. It also makes no difference whether the speed-limit sign is at the side of the road or on a gantry above the road.

### **Adaptive Highbeam Assist: always the best possible road illumination**

Another camera-based system that enhances active safety in the new-generation CL is Adaptive Highbeam Assist. It recognises oncoming vehicles or vehicles ahead with their lights on, and dips the headlamps. It also adjusts the beam range of the headlamps to give the driver the best possible visibility – without dazzling oncoming road users. The driver is able to see the course of the road, pedestrians and potential hazards more easily, and respond at an earlier stage. In addition, he can better concentrate on the road since he no longer has to operate the lever on the steering wheel.

Once the system registers oncoming vehicles or vehicles ahead with their lights on, it continuously adjusts the beam range to the distance so that the cone of light ends before it meets these vehicles. Adaptive Highbeam Assist also takes the steering angle into account, dipping the headlamps on tight bends. On clear stretches of road the system smoothly switches over to main beam.

Adaptive Highbeam Assist is based on a **multi-purpose camera located on the inside of the windscreen** and used also by the Speed Limit Assist and Lane Keeping Assist. Thanks to a special image-processing algorithm, the system is able to detect other vehicles and the distance to them. The range of the standard-fit, variable-control **bi-xenon headlamps** then is set based on these findings and adapted continuously depending on the distance to the vehicle in front or the oncoming traffic. The system operates at lightning speed, sending new data to the headlamps every 40 milliseconds and controlling the beam of light so that it always ends in front of the other vehicles.

## Intelligent Light System: the right light in any driving situation

Mercedes-Benz combines the Adaptive Highbeam Assist in the CL ex factory with the Intelligent Light System, which offers five different bi-xenon light functions, each of which is suited to typical driving or weather conditions:

- The familiar low-beam headlamps are replaced by **country mode**, which illuminates the road verge on the driver's side more broadly and brightly than before. This enables drivers to orientate themselves even more easily in the dark, and respond more rapidly when other road users cross the road.
- **Motorway mode**, which comes on automatically when driving above 90 km/h, increases the range of vision by up to 60 percent. This lighting function is activated in two stages: the Intelligent Light System first increases the output of the bi-xenon bulbs from 35 to 38 watts, thereby increasing the light intensity and providing noticeably better illumination of the road ahead and the side verges. The second stage of motorway mode is triggered at 110 km/h, when the beam of the bi-xenon module on the driver's side is elevated slightly. Motorway mode has a range of around 120 metres, and the driver is able to see about **50 metres further** at the centre of this cone of light than with conventional low-beam headlamps.

- With the enhanced **foglamps**, Mercedes-Benz improves driver orientation when visibility is poor. The new lighting function is activated at speeds below 70 km/h, as soon as the rear foglamp is switched on. The variable headlamp technology incorporated in the Intelligent Light System makes it possible to pivot the bi-xenon headlamp on the driver's side outwards by eight degrees, while lowering the beam of light at the same time. This adjustment illuminates the inner half of the road more brightly and reduces the degree of glare from light reflected back by the fog.
- Depending on the steering angle, yaw rate and vehicle speed, the **active light function** pivots the headlamps sideways by up to 15 degrees in fractions of a second to greatly improve road illumination. On a long sweeping bend with a radius of 190 metres, the driver is able to see 25 metres further than with conventional low-beam headlamps thanks to the active light function, which, incidentally, operates with both low and high beam.
- The **cornering light function** improves safety at crossroads, at T-junctions and on tight bends. It is activated automatically when the driver operates the turn indicators or turns the steering wheel at a speed below 40 km/h. The foglamps then swivel to illuminate the area diagonally in front of the vehicle for a distance of around 30 metres, with an angle of coverage of 65 degrees.

The standard equipment includes the **Headlamp Assist**, which automatically switches on the lights in the rain, at dawn or dusk, in the dark or when entering a tunnel.

### **LED technology: better to be seen**

Apart from seeing, being seen also plays an important role in road safety – not only at night. For this reason, as standard the CL is fitted with two seven-piece **LED strips for daytime running lamps** on either side of the front apron. They are distinguished by high light output, but low energy consumption of only ten watts. They are automatically switched on when the engine starts. If the ECO start/stop function shuts the engine off at a traffic light, the daytime running

lamps remain activated. When the low-beam headlamps are switched on, the LED strips are dimmed. The turn indicators and position marker lamps also feature LED technology.

Mercedes-Benz uses LED technology as standard also in the tail lights for the indicator, rear position lamp, brake light and rear foglamp. One of its advantages is rapid response. The LED brake light warns drivers approaching from behind more quickly in the event of danger. Like many up-to-date Mercedes passenger cars the CL also is equipped with **adaptive brake lights**. During emergency braking they flash four times faster than the hazard warning signals and are especially effective for warning drivers coming from behind of the danger of a rear end collision. LED technology also is used for the number plate lamp.

#### **Night View Assist Plus: highlighting pedestrians on the display**

The Night View Assist Plus system likewise available for the CL uses infrared technology to enhance the driver's range of vision when the main beams cannot be used: two separate headlamps illuminate the road with invisible, non-dazzling **infrared light**. A separate windscreen-mounted camera designed to pick up precisely this type of light records what happens in front of the car and sends the image to a display in the instrument cluster. The clear, needle-sharp greyscale image that appears here shows the scene in front of the car, allowing the driver to see pedestrians, cyclists or obstacles on the road at an early stage.

The latest development stage of the Night View Assist features a special **pedestrian-detection** function: as soon as the system detects pedestrians ahead of the car, they are highlighted on the display to make it easier for the driver to see them.

#### **ATTENTION ASSIST: warns of potentially fatal micro-sleep**

**ATTENTION ASSIST**, invented by Mercedes, is specified as standard for the new-generation CL. With this system, the Stuttgart motor manufacturer makes a further key contribution towards active safety as, according to studies, around a

quarter of all serious motorway accidents are caused by drowsy drivers. The innovative drowsiness-detection system monitors the driver's behaviour on a permanent basis, recording a total of more than 70 parameters to gauge the driver's level of awareness. This continuous monitoring is crucial for detecting the floating transition from awakesness to drowsiness and for giving the driver plenty of warning.

Based on a wealth of data, ATTENTION ASSIST calculates an individual driver profile during the first few minutes of every trip. This profile is then compared with the current sensor data and the prevailing driving situation by the car's electronic control unit. In addition to the vehicle speed, lateral acceleration and longitudinal acceleration, the Mercedes system also detects use of the turn indicators and the pedals as well as certain control inputs and external influences such as side winds or road unevenness, for example.

### **Drowsiness detection: steering behaviour as the key indicator**

Four years of development and testing work on the ATTENTION ASSIST system revealed steering behaviour to be an extremely meaningful indicator of drowsiness. In the tests involving over 670 drivers, the Mercedes scientists determined that drowsy drivers have trouble steering a precise course in their lane, making minor **steering errors** that are often corrected quickly and in a characteristic way. This effect occurs at an early stage when drowsiness kicks in – often before the dangerous micro-sleep phase. ATTENTION ASSIST is active at speeds of between 80 and 180 km/h.

If the system detects drowsiness, it emits an audible warning signal and flashes up an unequivocal message on the display in the instrument cluster:

"ATTENTION ASSIST. Break!"

### **DISTRONIC PLUS: keeping a safe distance with the help of radar**

With the DISTRONIC PLUS proximity control Mercedes-Benz offers another radar-based assistance system for the CL. DISTRONIC PLUS operates at speeds of

**between 0 and 200 km/h:** the proximity control keeps the car a set distance behind the vehicle in front and can even bring the car to a complete halt, depending on the traffic situation. If the system recognises that the gap to the vehicle in front is narrowing too quickly, it gives the driver an audible warning and, as soon as this first warning signal sounds, automatically calculates the brake pressure required to prevent a collision in this situation.

This technology helps the driver to gauge the level of risk and, in combination with **Brake Assist PLUS (BAS PLUS)**, makes the calculated brake boosting force available instantly, even if the driver does not press the brake pedal forcefully enough. Brake Assist PLUS allows controlled, targeted braking and, if necessary, increases the braking force right up to the point at which an emergency stop is performed, depending on the road speed and the distance to the vehicle in front.

When a potential accident situation is recognised, two **short-range radar sensors** with an 80-degree beam width and a range of around 30 metres, located behind the front bumper, and a **long-range radar** with a range of 200 metres instead of the previous 150, located in the radiator grille, are called upon to offer **assistance**. In addition, the sensor system now also has **medium-range detection capability**, allowing monitoring of the area up to around 60 metres ahead of the car with a 60-degree beam width. This new technology enables even more accurate monitoring of the traffic situation ahead and even better detection of dynamic events such as a car in front swerving suddenly.

#### **PRE-SAFE® Brake: autonomous braking as "electronic crumple zone"**

If the driver is distracted and fails to heed the immediate danger of a rear-end collision or ignores the visual and acoustic warnings of an assistance system, the PRE-SAFE® Brake is able to intervene and brake the CL autonomously.

This process has two stages:

- Around 1.6 seconds before the calculated impact point – after three audible warning signals – the system initiates **partial braking autonomously** and

decelerates the car with around 40 percent of the maximum braking power (approx 4 m/s<sup>2</sup>) and, as a precaution, activates the reversible PRE-SAFE<sup>®</sup> occupant protection systems. Designed to supplement the visual and audible warnings, autonomous partial braking gives the driver a further, perceptible signal to act. If the driver then brakes immediately, the maximum braking force is made available by BAS PLUS. If the driver swerves, the accident can be avoided at the last moment.

- If the driver fails to react even after this autonomous partial braking, it is able to activate the **maximum braking pressure** in this second stage in around 0.6 seconds before what is now recognised as an unavoidable accident – an emergency braking action that can significantly mitigate the severity of the impact. Practical tests by Mercedes-Benz engineers have shown that autonomous PRE-SAFE<sup>®</sup> braking reduces impact speed by an average of 16 km/h. The PRE-SAFE<sup>®</sup> Brake therefore acts as something like an "**electronic crumple zone**" to give the occupants even greater protection.

The PRE-SAFE<sup>®</sup> Brake, whose first generation had its world premiere in the CL in 2006, is active in a speed range **from 30 to 200 km/h** when vehicles are detected driving ahead. The system responds also on approaching a standing column of vehicles, provided the car is not going faster than 70 km/h. The PRE-SAFE<sup>®</sup> Brake uses the same short-range radar sensors and the same long-range radar as DISTRONIC PLUS and BAS PLUS. Mercedes-Benz offers a combination of all three systems in the **Driving Assistance package Plus**.

### **PARKTRONIC with Parking Guidance: easier manoeuvring with ultrasound**

On the basis of the information from a total of ten ultrasonic sensors, the further improved PARKTRONIC with Parking Guidance helps the CL driver to **park** safely: sideways inclined sensors on the front bumper record the length of a parking space as the car drives past it (at a speed of up to 36 km/h) and indicate on the cockpit display whether the space is large enough to park in. The space must be at least 1.3 metres longer than the car. After reverse gear has been engaged, instructions for safe parking appear on the display in the instrument cluster.

The standard-fit system replaces the previous Parking Assist with eight radar sensors. Once it finds a suitable parking space on the front passenger's side, a blue "P" symbol appears on the instrument cluster. Parking spaces on the driver's side are indicated upon actuation of the left turn indicator. If the driver stops the coupé at the position shown on the display and engages reverse, a bird's-eye view symbolic representation of the parking situation appears in the instrument cluster display. Coloured lines tell the driver how best to park: a red track shows the car's current steering angle, a yellow track recommends the angle necessary for parking. The driver now turns the steering wheel until the two coloured tracks coincide and can then back up slowly. As soon as target and actual steering angle agree, the auxiliary lines on the display change to the colour green. As the car reverses, an acoustic signal informs the driver when the position is reached where opposite lock should be applied.

#### **Looking back: camera in boot lid**

The proven Mercedes system **PARKTRONIC**, which during parking indicates the distance between the CL and an obstacle or another vehicle by means of optical and acoustic signals, also is active during this parking guidance process and supports the driver. As further parking or manoeuvring aid Mercedes-Benz offers a **reversing camera** (standard for the CL 600) that sweeps the area behind the coupé. It is mounted in the boot lid above the licence plate and is activated automatically when the driver engages selector position "R". The camera image is projected onto the COMAND display. Based on the vehicle dimensions, speed and steering angle, an electronic control unit calculates the optimal path the vehicle should take into the parking slot. Coloured lines are superimposed on the camera image to guide the driver.

<b>ABS</b>	Standard: ensures that the CL remains steerable even when braking.
<b>ESP<sup>®</sup></b>	Standard: reduces the risk of skidding and stabilises the car.
<b>Brake Assist (BAS)</b>	Standard: provides full braking power almost instantaneously in the event of an emergency stop.
<b>ATTENTION ASSIST</b>	Standard: is able to recognise signs of drowsiness by analysing driver behaviour, and warn the driver.
<b>Intelligent Light System</b>	Standard: incorporates five light functions specially configured for typical driving situations and weather conditions.
<b>Adaptive Highbeam Assist</b>	Standard: detects vehicles in front or oncoming vehicles and, in each case, provides the optimum headlamp range.
<b>Active Lane Keeping Assist</b>	Optional: detects carriageway markings, warns the driver if the vehicle leaves the recognised lane unintentionally, and takes counteraction if necessary through selective braking intervention.
<b>Speed Limit Assist</b>	Optional: uses a camera to detect speed-limit signs and indicates the current speed limit in the display and in the navigation map view.
<b>Active Blind Spot Assist</b>	Optional: uses radar to monitor the areas to the sides and rear of the coupé, warns the driver if it detects another vehicle in the exterior mirror's blind spot, and if necessary takes targeted corrective braking action.
<b>DISTRONIC PLUS</b>	Optional: uses radar to automatically maintain a desired distance from the vehicle in front, and warns the driver if the gap narrows rapidly.
<b>Brake Assist BAS PLUS</b> (in conjunction with the short-range sensors of DISTRONIC PLUS)	Optional: uses radar sensors to detect an imminent rear-end collision and calculates the necessary level of braking assistance.
<b>PRE-SAFE<sup>®</sup> Brake</b> (in conjunction with the short-range sensors of DISTRONIC PLUS)	Optional: initiates partial or emergency braking automatically if it recognises an acute risk of an accident and the driver fails to react.
<b>PARKTRONIC with Parking Guidance and reversing camera</b>	Standard: ultrasonic sensors measure the length of parking spaces as the car drives past; instructions for safe parking appear in the display.

## Sturdy structure, sensitive sensors

- **PRE-SAFE®: early accident detection through anticipatory occupant protection**
- **Restraint systems: sensors ensure protection in keeping with the situation**
- **Body: high crashworthiness owing to high-tech steel alloys**
- **Aerodynamics: wind resistance and wind noise exemplary**

Occupant protection in the new-generation CL already begins before an accident. The Mercedes-Benz invention PRE-SAFE®, a standard feature of the two-door car, sees to that. Much as living beings react instinctively and seek cover when danger threatens, when an accident threatens PRE-SAFE® is able to activate precautionary protective measures for the occupants so that the belts and airbags can protect them to best effect during a collision.

This early accident detection is possible because PRE-SAFE® is an intelligent synergy of active and passive safety. The anticipatory occupant protection system is linked to the Brake Assist and the Electronic Stability Program (ESP®), BAS PLUS (optional), DISTRONIC PLUS (optional), and the PRE-SAFE® Brake (optional), whose sensors detect potentially critical driving situations and send the relevant information to the electronic control units within a matter of milliseconds. PRE-SAFE® also uses this comprehensive sensor data.

If PRE-SAFE® recognises, for instance, that the car is about to go into a skid, the driver is forced to brake sharply or the PRE-SAFE® Brake is going into action, it brings the front-passenger seat into a more favourable position and, if necessary, begins to close the side windows and the sliding sunroof automatically, so that the occupants are not thrown out of the car in an accident and the windowbags find better support in a side collision or rollover. The positioning of the front-passenger seat prepares the occupants for the possible collision such that belts and airbags can protect them as best possible.

Another PRE-SAFE<sup>®</sup> measure: the active multicontour front seats in the CL 500 4MATIC BlueEFFICIENCY and CL 600 offer the possibility of seating the driver and front passenger even more securely, thereby limiting dangerous whiplash movements by the upper body. If PRE-SAFE<sup>®</sup> detects a critical driving situation, the system instantly activates the air chambers in the seat cushions and backrests. These then envelop the seat occupants and give them support. Tests at the Mercedes-Benz Technology Center have shown that this PRE-SAFE<sup>®</sup> function increases the distance between the shoulder and the inner door lining by up to 40 millimetres at a lateral acceleration of 0.6 g. This enables the sidebag to fulfil its protective function even more effectively.

All PRE-SAFE<sup>®</sup> protective measures are reversible: if the accident is averted, the occupants are able to reset all systems to the desired positions. The anticipatory occupant protection system is then ready for action again straightaway.

**PRE-SAFE<sup>®</sup> functions during emergency braking**

- Electrically adjustable front-passenger seat is moved backwards or forwards into the optimum position whilst the cushion angle and backrest inclination are also optimised
- The bolsters in the seat cushions and backrests of the active multicontour front seats\* are inflated

**PRE-SAFE<sup>®</sup> measures in the event high lateral acceleration is detected**

- The side windows at the front and rear are closed
- The sliding sunroof is closed

\*depending on equipment

**Individual safety according to personal height and bodyweight**

If the accident is unavoidable despite advanced assist systems, a powerful restraint system goes into action in the new-generation CL to protect the occupants in a way appropriate to the need and the situation. Using various sensors, a computer evaluates not only the seriousness of the accident, but also

personal data describing the front-seat passenger. If the sensor in the seat cushion has identified a small passenger, depending on the type of accident it initially deploys only the first airbag stage so that the air cushion is less fully inflated. If it detects a larger passenger, however, both airbag stages are deployed.

In addition, on board is the proven automatic child seat identification feature that deactivates the front-passenger seat airbag when a special Mercedes-Benz rear-facing child seat with transponder has been recognised. If the front-passenger seat remains unoccupied, airbag, sidebag and belt tensioner on the front-passenger side are deactivated.

#### **Sensitive: eleven sensors for accident detection**

The CL has a total of eleven installed sensors that provide immediate data on the probable type and seriousness of a collision:

- **Frontal impact:** In addition to the central sensor in the airbag control unit, the luxury coupé is equipped with "up-front" sensors. Because of their exposed position in the front module, they detect the anticipated strength of an impact even earlier and with even more precision, so that the time between the crash and the activation of airbags and seat-belt tensioners can be reduced even further.
- **Side impact:** pressure sensors relay rapid, precise information to the control unit in the event of an impact from the side in the area of the doors. These sensors react when the air between the doors' outer skin and inner lining is compressed on impact. Additional side sensors are installed in the lower (not visible) B-pillars.
- **Rear end collision:** if the central crash sensor in the interior detects a rear impact, it triggers the pyrotechnic front and rear belt tensioners to fix the occupants securely in their seats.

- **Rollover:** in side rollovers, a rollover sensor integrated into the airbag control unit can activate the seat-belt tensioners and windowbags. Page 80

### **Restraint systems: a series of eight airbags**

With eight airbags fitted as standard, not to mention seat-belt tensioners and belt-force limiters, the new-generation CL offers an even more extensive package of safety equipment than its predecessor. The airbags, which deploy in a matter of milliseconds in the event of an accident, include two adaptive airbags for the driver and front passenger, two sidebags in the front-seat backrests, two sidebags in the rear compartment side panels, and two large windowbags which extend from the A-pillar to the C-pillar during a side impact.

All the occupants have three-point automatic seat belts with seat-belt tensioners and belt force limiters. The force limiter of the front belt straps is adaptive: after attaining a certain maximum level of force, the force limiters switch to a lower level of force – the belts are loosened so that front passengers can plunge deeper into the airbags. This reduces the loads acting on the chest area of the occupants.

The steering column serves the same purpose. During a front-end impact, it collapses telescopically by up to 80 millimetres.

## The occupant restraint system of the CL at a glance:

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System components	Front seats	Rear seats
<b>3-point seat belts with automatic belt height adjustment</b>	<ul style="list-style-type: none"> <li>• With automatic comfort-fit function</li> </ul>	<ul style="list-style-type: none"> <li>•</li> </ul>
<b>Belt tensioners</b>	<ul style="list-style-type: none"> <li>• Buckle retractor</li> </ul>	<ul style="list-style-type: none"> <li>• Inertia-reel tensioners</li> </ul>
<b>Belt-force limiters</b>	<ul style="list-style-type: none"> <li>• Adaptive</li> </ul>	<ul style="list-style-type: none"> <li>•</li> </ul>
<b>Head restraint height and angle adjustable</b>	<ul style="list-style-type: none"> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>•</li> </ul>
<b>Front airbags</b>	<ul style="list-style-type: none"> <li>• with adaptive control on the front passenger side incl. customisation</li> </ul>	-
<b>Sidebags</b>	<ul style="list-style-type: none"> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>•</li> </ul>
<b>Windowbags</b>	<ul style="list-style-type: none"> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>•</li> </ul>
<b>Automatic child seat detection</b>	<ul style="list-style-type: none"> <li>• Optional on the front-passenger side for Mercedes-Benz child seats with transponder</li> </ul>	-

- Standard

## Mercedes safety after the accident too

The comprehensive Mercedes safety concept also takes into account the phase after the traffic accident. To prevent follow-on damage, the fuel supply of the engine is automatically blocked in the CL in accidents above a certain severity. The hazard warning signal also switches on to warn drivers approaching from behind and to prevent new accidents.

After an accident in which airbags are deployed, all the side windows open just enough to leave a narrow space through which the interior can be ventilated. Additionally, the door locks are automatically released so that injured passengers

can be rescued more quickly. Specially designed crash joints prevent the doors from becoming blocked by the wings. The passengers can also open the doors after an accident, because Mercedes-Benz uses cables that remain intact after deformation for the internal activation of the door locks. Markings on the rear windows show the emergency services places where they can cut through the C-pillars in the event of a serious accident to quickly reach injured passengers and provide them with medical care.

### **Crashworthy thanks to high-tech steel: carefully designed body**

The basis for the exemplary level of occupant protection in the CL is an intelligently designed bodyshell with large deformation zones at the front and rear ends. Around 44 percent of all the bodyshell components are made of high- or increased-strength high-tech steel alloys, which offer the maximum strength for the minimum weight. In addition, ultra high-strength high-tech alloys find use in the body areas important for occupant protection. In this top-of-the-range model with the star, the share of conventional deep-drawn steels is now only 26 percent. Mercedes-Benz manufactures the bonnet, front wings, door panels, front and rear module carriers as well as the rear panel behind the rear seat backrest from aluminium.

The boot lid and the spare wheel well likewise are made of a lightweight material: plastic.

The front module and the frame-type integral support, to which the engine, front axle and steering are attached, connect the front side members with the second side member plane above the wheel housings. During a frontal collision, this gives rise to two **important paths along which forces and loads are transmitted**, which is one of the major reasons for the exemplary passenger protection of the CL. Similarly, the solid, multi-layer side skirts can absorb large forces and divert the impact energy past the passenger compartment.

In the event of a one-sided frontal impact the **continuous firewall cross member** Page 83 distributes the impact forces over a large area, into the centre tunnel and the longitudinal members at the sides. An additional upper member increases the rigidity of the firewall and reduces the extent to which the pedals are pushed into the passenger compartment.

The V engines of the CL make an important contribution to passenger safety as well. Because of their compact design, they allow greater deformation in the front-end structure, reducing the strains on the passengers. The propeller shaft has likewise been equipped with special deformation elements.

The distribution of the impact forces onto several vertical and horizontal planes specifically designed to carry certain amounts of load not only helps keep passengers safe; it also makes collisions with smaller vehicles less "uneven". The front-end structure of the big coupé is designed in such a way that it purposefully dissipates collision energy for the other vehicle, too.

### **Practically undeformable: the passenger compartment**

The passenger cell is a **structure virtually immune to deformation** which keeps the passengers' survival space largely intact, even at high impact speeds, regardless of whether the collision is head-on, from the rear or from the side, or whether the vehicle rolls over. The use of high-strength steel and thicker panels plays as important a role here as the installation of additional load-bearing members.

A complex and carefully designed floor structure forms the sturdy foundation for comprehensive occupant protection. Eight side member sections, four cross members and a three-part tunnel reinforcement stabilise the passenger compartment in a crash, and ensure that impact forces are distributed over a large area.

## **Side structure: optimally prepared for collisions**

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The elegant lateral lines with the continuous expanse of glass and the delicately traced roof pillars were made possible by carefully designed bodywork features which help the coupé to meet the most stringent test conditions in regard to torsional stiffness and occupant protection even without upper B-pillars.

In a side impact, the main elements that come into play to stabilise the passenger compartment are the sturdy side skirts, the lower B-pillars, the four cross members in the floor area and a solid steel section below the dashboard. Mercedes-Benz produces the sills and B-pillars using increased-strength steel alloys, which are far superior to all other materials in terms of their tensile strength. Side impact protection is also provided by steel reinforcing sections with a high tensile strength in the doors.

High-strength fastening surfaces for the door hinges additionally provide sturdy tensile bracing in the area of the side structure that can effectively protect the occupants in a side collision.

In addition to a high level of safety, the doors of the CL have functions which make access and egress more convenient. A hydraulic system ensures that from an opening angle of 15 degrees the doors are arrested in any position – even on gradients or in strong winds. An electric servo-locking mechanism closes all the doors (and the boot lid).

## **Rear-end structure has successfully passed the toughest of crash tests**

At the rear the passenger compartment is protected by a **meticulously designed deformation zone**. In addition to the aluminium transverse section and the steel crash boxes of the bolted rear module, this consists of two sturdy side members and a cross member in the area of the boot floor. The suspension sub-frame of the rear axle likewise forms an energy-absorbing plane in the event of an impact.

The fuel tank is located in the protected area in front of the rear axle. Even with respect to rear-end protection, this means that the CL meets the world's most stringent crash test standards such as the US test according to FMVSS301 at 80 km/h.

### **Easy repair: the front and rear modules**

In accidents involving low collision speeds, the proven module design for the front and rear sections protects the vehicle from major damage. The bumper cross members of the modules consist of high-strength extruded aluminium sections. They are connected to the side members via steel crashboxes and designed in such a way that the energy of impact is first absorbed by the aluminium sections and the crash boxes. The portions of the body shell behind them thus remain undamaged. In addition, the sturdy cross members take on the job of transferring energy to the non-stressed side of the body structure during an offset frontal impact.

The front and rear modules are bolted to the body and can be replaced without elaborate and costly welding work during accident repairs. The individual components within the modules are likewise connected to one another by bolts.

### **Long-term protection: fully galvanised body and paint with nanoparticles**

Mercedes-Benz has developed an effective package of measures for long-term protection against corrosion for the CL bodyshell. It is based on fully galvanised body panels, some of which have an additional organic coating on both sides depending on their location – on the doors for instance or on the side members at the front, sides and rear. This coating contains rust-inhibiting zinc pigments too. Mercedes-Benz also protects the most vulnerable structural areas of the bodywork – for example the front side members, the front end structure's upper side member level, the side skirts and the rear wheel arches – with a cavity-fill preserving agent.

In addition, sealed welds prevent corrosion from developing. Seam sealing is applied to a great many of the welded connections of the floor structure along with the bonnet, doors, boot lid, rear wheel arches and tank flap. Extensive underfloor panelling made of a plastic laminate protects the body from flying stones, moisture and dirt.

An important contribution to exemplary long-term quality and value retention is also made by a scratch-resistant **clear coat employing nanotechnology**. It is part of the standard specification of the CL and is used both on metallic and non-metallic paints. It features tiny ceramic particles less than a millionth of a millimetre in diameter which are integrated into the molecular structure of the paint binding agent. These particles improve the paint's scratch resistance by a factor of three and lastingly ensure a noticeably better gloss.

### **Aerodynamics: an example among the luxury coupés**

The previous model with a drag coefficient of 0.27 was the most aerodynamic vehicle in its class on its debut. In the successor the Mercedes-Benz specialists further improved this figure through meticulous attention to details like the new exterior mirror housings, a spoiler lip on the lower engine compartment covering and various design modifications. The redesigned front bumper, for example, deflects airflow around the front wheel even more efficiently. The design of the radiator grille also helps improve aerodynamic efficiency. Result: the new model generation impresses with a **top  $c_d$  figure of 0.26** in the CL 500 BlueEFFICIENCY. The flagship model of the brand with the star thus remains a model of aerodynamics among the luxury coupés.

The better the airflow around the vehicle body, the less wind noise there will be. The good aerodynamics of the CL therefore also benefit acoustics. Well-targeted aero-acoustic measures include reinforced outer skin surfaces, noise-insulating door seals, six-millimetre thick side windows, windscreen wipers positioned beneath the stream of air, a special rubber seal between rear window and boot lid, and serrated draught deflectors on the tilting/sliding sunroof.

	CL new	Preceding model
<b>Drag coefficient (<math>c_d</math>)</b>	0.26-0.27	0.27-0.28
<b>Frontal area (A) m<sup>2</sup></b>	2.32-2.33	2.28-2.30
<b>Wind resistance (<math>c_d \times A</math>) m<sup>2</sup></b>	0.603-0.629	0.616-0.644

Apart from wind noise, the Mercedes developers managed to further reduce driving noise and tyre noise in the new-generation CL. They achieved this with additional damping foils in the rear wheel arches which absorb noises and vibrations just as effectively as the boot floor, heavier compared with the previous model, and the increased insulation of the rear panel in front of the boot. To reduce engine noises, the coupé was given new underfloor panelling in the area of the engine compartment along with a redesigned insulating panel for the bulkhead in front of the cockpit.

## Agile steering, active suspension, adaptive brakes

- **New: Active Body Control with crosswind stabilisation**
- **Direct-Steer system enhances driving pleasure**
- **Torque Vectoring Brake: more stability, more dynamism**
- **Electronically controlled brake system ADAPTIVE BRAKE**

The new-generation CL remains a masterwork among the luxury coupés in regard to handling dynamics, road roar and tyre vibration characteristics and agility. The Mercedes-Benz developers achieved this with a number of new developments and improvements like the Direct-Steer system, whose variable ratio depends on the steering angle, and the modified Active Body Control (ABC) with crosswind stabilisation.

### **New with crosswind stabilisation: Active Body Control**

The basis for the agile handling of the CL, which allows no compromises on suspension comfort, is the Active Body Control suspension (standard for CL 500 BlueEFFICIENCY and CL 600) with which Mercedes-Benz opened up new dimensions in handling dynamics in 1999 in the CL Coupé of previous C 215 model series. Since then the Sindelfingen engineers have developed the system consistently further with every model change and facelift so that eleven years down the road it still marks the peak of suspension engineering. For the new-generation CL the suspension specialists complemented the Active Body Control with a **crosswind stabilisation** function.

In strong gusts of crosswind, and depending on the direction and intensity of the wind having an effect on the vehicle, this system varies the wheel load distribution in such a way that the effects of winds are largely compensated or reduced to a minimum. For this purpose the ABC control unit uses the yaw rate, lateral acceleration, steering angle and road speed sensors of the Electronic Stability Program ESP®.

The system filters out weak crosswind signals, only coming into action when a certain threshold has been exceeded. In this case the driver is assisted by a change in the diagonal wheel load distribution, for example affecting the left front wheel and the right rear wheel. Specialists refer to this as Active Body Control crossover. The resulting steering effect is sufficient to reduce the effect of the crosswind.

Crosswind stabilisation is active at speeds above 80 km/h, when travelling straight ahead or taking gentle corners. If the driver takes purposeful and immediate corrective action himself, the function deactivates itself. Trials with test drivers, in which wind conditions akin to hurricane speed were simulated, elicited a positive response from all those involved.

### **Designed to balance the car in a flash: the suspension cylinders**

Technical background to ABC: In this Mercedes-Benz active suspension system, the four spring struts are equipped with microprocessor-controlled plunger cylinders that can almost completely compensate for lifting, rolling and pitching of the body. The computer uses various acceleration sensors to obtain information on the current driving situation, and compares these data with those from the pressure sensors in the spring struts and the level sensors on the control arms. The system then computes the control signals, which the servo-hydraulic valves at the front and rear axle transform into precisely metered oil flows.

Once oil flows into the plunger cylinders, this modifies the tracing point of the steel springs integrated into the spring struts, generating the necessary force to counteract the body movements.

Whereas up to now ABC worked with a constant hydraulic pressure, in the CL 500 BlueEFFICIENCY for the first time a **dual-pressure concept** is employed: in the main circuit a permanent pressure of 185 bar prevails, to which a secondary circuit with maximum 10 bar hydraulic pressure is added as new feature in the hydraulic pump. By means of an additional control valve, at traffic lights or on smooth, straight roads ABC can change from main to secondary

circuit. At the same time the pump is switched off. Advantage of the new system: Page 90  
the hydraulic pump requires less energy, which takes load off the engine and cuts  
fuel consumption. The **savings effect is 0.2 litres of premium petrol per  
100 kilometres** (NEDC combined cycle).

### **At the touch of a button: individual suspension characteristics**

The CL offers the possibility of changing the characteristics of transmission and suspension, independently of each other, from comfortable to sporty. The switch for the transmission tuning is located on the centre console next to the COMAND Controller; the switch to activate the Sport mode of the Active Body Control and die AIRMATIC electronically controlled damping system (CL 500 4MATIC BlueEFFICIENCY only) is positioned on the control panel between instrument cluster and COMAND display.

For the suspension, the driver can choose one of two modes:

- **Comfort:** Active Body Control and AIRMATIC operate in Comfort mode to comfortably absorb bumps and ripples.
- **Sport:** bumps and ripples are absorbed, but with a tauter touch.

The independent control of the transmission and suspension modes gives the driver yet more freedom to determine the overall characteristics of the Mercedes coupé. Along with the "classic" combination of sporty suspension and transmission characteristics, in future the driver has the opportunity, for example, to combine a fuel-saving ECO transmission mode with a sporty, taut suspension, or to travel with a comfort-enhancing damper configuration and sporty transmission mode.

If the CL is travelling on poor roads that call for higher ground clearance, the driver can raise the body by 45 millimetres at the touch of a button. At high speeds, in the Sport mode ABC lowers the body automatically by as much as ten millimetres to reduce wind resistance and fuel consumption.

The new Direct-Steer system of the CL was developed from the familiar speed-dependent steering that Mercedes-Benz offers for many of its models. In this case the steering effort depends on the vehicle speed – the effort required increases with the speed. In practice this means more steering comfort during parking manoeuvres, which then require less effort, and more safety at higher speeds where a greater steering effort ensures safe straight-line stability, for example on motorways.

The new Direct-Steer system retains these positive attributes of speed-sensitive steering and adds a **variable steering ratio** to them. This changes depending on the steering angle. The ratio is normal when the steering is more or less centred, which makes for good straight-line stability and therefore safety. The steering ratio changes very rapidly to become more direct as soon as the steering angle reaches five degrees, reaching its end value at a steering wheel angle of 95 degrees, where the steering feels very direct. Only relatively small movements of the wheel are then required to make course corrections. With the Direct-Steer system, the number of turns of the steering wheel required from stop to stop is reduced by around 25 percent.

The perceived effect of Direct-Steer is however even more important than measured data. Even at inner-city speeds the driver needs to turn the wheel less frantically, with changes of direction faster and involving less effort. Winding country roads also become the natural habitat of the Mercedes-Benz luxury coupé equipped with Direct-Steer, as very small steering wheel movements are necessary to steer the car.

Rapid sequences of bends can be mastered almost intuitively safely and precisely, and with enormous enjoyment. This all adds up to considerably more agile handling.

## **Purely mechanical: variable steering ratio**

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Despite its remarkable effect, the key component of the **Direct-Steer system** is simply a steering rack. Its secret lies in the teeth cut into it. Starting from the neutral position for driving straight ahead, they are spaced increasingly farther apart. The change in steering ratio is therefore produced **by purely mechanical means**. With this solution, Mercedes engineers have been able to dispense with the complex actuators and sensor systems used by other variable steering systems. The advantages include very low susceptibility to faults and low weight. Moreover, the system always responds predictably and in the same way, while other variable steering systems sometimes require rapid adaptation by the driver in rapidly changing situations.

Another comfort feature: the height and lateral position of the telescopic steering column of the CL are electrically adjustable. As an additional convenience, the steering column automatically helps the driver enter and leave the vehicle. After the driver withdraws the electronic ignition key, the steering wheel moves upward, increasing the available legroom. The steering wheel remains in this position until the key is once more inserted into the ignition switch, at which point it returns to the previous position, which is remembered.

## **Torque Vectoring Brake: ESP® helps with the steering**

Extra safety at the physical limits, as well as even more agility, is provided by the Torque Vectoring Brake in the new-generation CL – **targeted, one-sided braking intervention** at the inside rear wheel when cornering. If ESP® detects a tendency to understeer, the newly developed Torque Vectoring Brake adopted from the S-Class saloon generates a defined turning or yawing moment around the vehicle's vertical axis within fractions of a second. Thanks to the different torque distribution that results, the CL turns into the bend under precise control without any loss of handling dynamics. The advantage of this solution over complex mechanical components such as an active steering rear axle, additional multi-disc clutches or an active differential: the Torque Vectoring Brake can be implemented

without an increase in vehicle weight and therefore no disadvantages in terms of fuel consumption. This Torque Vectoring Brake function is standard equipment in the new generation CL.

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### **ADAPTIVE BRAKE: high-tech brakes for maximum safety**

The Mercedes-Benz CL also is the benchmark where its braking system is concerned: thanks to electronic control of the hydraulic dual-circuit brake system, the standard ADAPTIVE BRAKE allows assist functions that enhance safety and comfort. These include **priming** of the braking system in critical situations: when the driver changes abruptly from the accelerator to the brake pedal prior to emergency braking, ADAPTIVE BRAKE increases the pressure in the brake lines to bring the brake linings close to the discs so that they are able to engage instantly, and with full force, when the brake pedal is operated. In this way the system supports the standard Brake Assist and Brake Assist PLUS (BAS PLUS).

ADAPTIVE BRAKE also has safety benefits in the wet: the system briefly applies the brakes at regular intervals to wipe the film of water from the brake discs and ensure that the brakes are able to perform at their peak. This automatic **brake drying function** is always activated when the windscreen wipers of the CL have been operating for a certain length of time. The finely metered brake pulses are imperceptible to the driver.

After the vehicle has been braked to a standstill, briefly pressing the brake pedal a little further is all that is required to activate the **HOLD** function.

The coupé is then held by the brakes, even if the driver's foot comes off the brake pedal. In this way ADAPTIVE BRAKE prevents the car from rolling forward inadvertently when stopped at traffic lights or stuck in stop-and-go traffic, and from rolling back when facing a slope. The HOLD function is deactivated automatically when the car moves off again.

## Very vigorous: extra-large brakes

Large brake discs at the front and rear provide the technological basis for safe and reliable deceleration using ADAPTIVE BRAKE. Depending on the engine installed, the disc diameters range up to 360 millimetres at the front and up to 330 at the rear. The front brake discs are perforated for all model variants. The perforations shed moisture and dirt, which increases the brakes' reliability and maintains their excellent deceleration values even in inclement weather conditions. A 9.5-inch tandem brake booster satisfies high standards for responsiveness and ease of use.

### Braking system data for the Mercedes-Benz CL

<u>Front axle</u>	<b>CL 500 BlueEFFICIENCY</b>	<b>CL 600</b>
<b>Brake calliper</b>	4-piston fixed calliper	6-piston fixed calliper
Pad area	2 x 77 cm <sup>2</sup>	4 x 120 cm <sup>2</sup>
<b>Brake disc</b>	Internally ventilated,	Internally ventilated,
Diameter	perforated	perforated
Thickness	350 mm	360 mm
	32 mm	36 mm
<u>Rear axle</u>		
<b>Brake calliper</b>	1-piston floating calliper	4-piston fixed calliper
Pad area	2 x 38 cm <sup>2</sup>	2 x 48 cm <sup>2</sup>
<b>Brake disc</b>	Internally ventilated	Internally ventilated,
Diameter	320 mm	330 mm
Thickness	24 mm	26 mm

The Mercedes-Benz CL also features an extremely easy-to-use electric parking brake as standard. Pressing a button on the dashboard is all that is needed to activate the brake. If the driver engages a gear and drives off, the brake is automatically released. The key components of this system are two separate servo drum brakes on the rear wheels and an electric motor with speed-reducing gear that applies the brake shoes by means of cables. The electric parking brake can also be engaged if the engine is switched off.

## **Standard: tyre pressure loss warning system**

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Tyre pressures in the CL are monitored by the Electronic Stability Program ESP<sup>®</sup>, or by a special system based on radio technology:

- **ESP<sup>®</sup>** continually compares the speeds of the wheels, which are mainly dependent on the road speed, the load and the tyre pressure. In addition, the control unit automatically checks other dynamic performance criteria such as lateral acceleration, yaw rate and wheel torque, in order to identify any loss of pressure in a tyre. In doing so, the system detects any anomalies and informs the driver via a message on the central display panel: "Tyre pressure, check tyres". The tyre pressure loss warning system based on ESP<sup>®</sup> technology is included in the standard equipment of the CL.
- In the **tyre pressure monitoring system** (optional), a sensor measures both the air pressure and the air temperature inside the tyre and transmits the data by radio at regular intervals to an underbody receiver aerial. Intelligent software automatically identifies the positions of the wheels so that the driver is provided with information about the air pressure in each of the four tyres via the central display panel.

## **Effortless progress in any weather: the 4MATIC all-wheel drive**

Mercedes-Benz offers 4MATIC all-wheel drive for the CL 500 BlueEFFICIENCY. The centrepiece is a centre differential with a planetary gear set. The permanent, defined torque distribution of 45:55 percent between the front and rear axles ensures reliable and predictable driving characteristics on all road surfaces. An integrated multi-disc clutch guarantees even more traction and optimal handling stability with the onset of slip.

Mercedes-Benz combines 4MATIC with the Electronic Stability Program ESP<sup>®</sup> and the traction system 4ETS, which specifically brakes spinning wheels and transfers the torque to the wheels which still have good traction. The system uses sensor signals to meter the automatic braking impulses that increase traction

when moving off on slippery surfaces and can improve handling in critical situations. 4ETS achieves the effect of conventional differential locks and provides more comfort than the technology used in other all-wheel drive vehicles.

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Owing to its compact, lightweight, low-friction design, 4MATIC all-wheel drive has definite advantages over other systems in terms of weight, fuel consumption, comfort and passive safety. Depending on the engine variant, this all-wheel drive technology incurs an unrivalled, low weight penalty of only 70 kilograms.

#### **Strong team: AIRMATIC air suspension and Adaptive Damping System**

AIRMATIC air suspension is included as standard in the CL 500 4MATIC BlueEFFICIENCY. Mercedes-Benz combines this with the **Adaptive Damping System (ADS)**, which continuously regulates the shock absorber characteristics and takes the road conditions, driving style and vehicle load into account. The system adapts the damping forces for each individual wheel to the current situation within just 50 milliseconds. As in the variants with Active Body Control, the driver can individually adjust the ride height and the suspension and transmission characteristics.

## Dream cars and technical trendsetters

- **Long history of manufacturing top-flight two-door cars**
- **Exclusive pacemaker in automotive development**

The large coupés from Mercedes-Benz combine utmost exclusivity and ambitious design with trailblazing high-end technology. Building prestigious automobiles with a sporty note to meet the most exacting requirements was a carefully and intensely cultivated tradition at Mercedes-Benz long before the Second World War. For example, very rare coupé versions of the supercharged cars with the star on the bonnet were produced in the 1920s and 1930s. They are real eye-catchers even today and coveted witnesses to the culture of their period whose value and significance needn't fear comparison with precious paintings.

The luxury coupés never were mere variants of the saloons, but a clearly individual line within the model ranges. They also presented pioneering innovations in automotive technology. The 1961 220 SEb Coupé, for instance, was the first Mercedes production model to feature disc brakes. The Electronic Stability Program ESP<sup>®</sup> had its world premiere in the S 600 Coupé in 1995; the Active Body Control suspension system, in 1999 in the CL. In 2006 the PRE-SAFE<sup>®</sup> Brake, another technical innovation, debuted in a large Mercedes coupé. But aside from all such technical refinements, the coupés with the star primarily awaken emotions. Their appearance comes close to being an offensive of the senses. In short, Mercedes coupés have always been dream cars of the special kind – every one of them a classic.

### **1952: back in the elite class with the 300 S Coupé**

Mercedes-Benz took up the tradition of the pre-war coupés again in October 1951, presenting the 300 S Coupé, the luxury-class coupé of the W 188 series, at the Paris Motor Show. General enthusiasm prevailed and the trade press was exuberant, speaking of a "world-class car". But the international public also was

surprised since no one expected that a German motor manufacturer, virtually starting from nothing, could manage the transition from the post-war economy of shortages to the smooth production of exclusive luxury vehicles.

The 300 S Coupé that went into production in 1952 captivated viewers with the curves of its wings and its long bonnet. These stylistic elements represented "traditional and in this case especially finely shaped lines," as one contemporary commented. The refined coupé with its six-cylinder in-line engine developed **100 kW** (150 hp), enabling a top speed of 175 km/h. "Able to cover longest distances in the shortest time with the least possible strain on body and nerves" was the message sent out to the coupé clientele, which included the American film stars Gary Cooper and Errol Flynn.

In 1955 Mercedes-Benz already presented the redesigned 300 Sc Coupé. Direct petrol injection instead of a carburettor made engine output climb to **129 kW** (175 hp). In addition, from the 300 Saloon the new coupé adopted the single-joint swing axle, which further enhanced ride comfort. The fortunate combination of peak performance and handling safety with absolute elegance and quality was regarded by experts in those days as the "measure of what it is possible to achieve in automotive engineering". This judgement holds good to this day.

Between 1951 and 1958 only 314 units of the coupés of the ultra-exclusive W 188 model series were built. The small volume can be traced to the still relatively small market at that time. But the few post-war coupés still preserved today are some of the most sought-after collector's items and trade in the highest categories at auctions.

## 1956: the Ponton Coupé debuts

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Ambitious design, trailblazing engineering and pleasurable motoring also merged to form a unified whole in the 220 S Coupé of the W 180 model series introduced in 1956. Like the 220 S Cabriolet this two-door car was based on the 220 S Saloon. All three body variants feature the characteristic pontoon-like integrated-design body with smooth flanks and no mounted wings or running boards. Quickly they got the catchy name "Ponton-Mercedes", a standing expression in the history of the automobile even today. Chrome-plated bumpers and foglamps lent the face of this coupé its character. For the first time a Mercedes-Benz coupé had a self-supporting body solidly welded to the frame-floor unit.

The 220 S Coupé originally came with a **74 kW** (100 hp) in-line six-cylinder engine. A short time later the Mercedes engineers increased the engine output to **78 kW** (106 hp). An improved front suspension made for increased ride comfort, as did the single-joint swing axle with low pivot point. As an optional extra for a price of 450 marks, from 1957 the customer could get a hydraulic-automatic clutch called "Hydrak".

The interior appointments were very up-market. The coupé came, for example, with polished fine wood trim for the instruments and leather upholstery as well as a stationary fan for the heating and ventilating unit. Contemporary press people described the coupé as a unity of "modern engineering and functional elegance". To boost performance, from September 1958 Mercedes-Benz offered the 220 SE of the W 128 model series with direct petrol injection for 1900 marks; it raised output to **85 kW** (115 hp). The last variants built had **88 kW** (120 hp) to offer.

Mercedes-Benz manufactured a total of 2081 units of the "Ponton" coupés 220 S and 220 SE. They too are much sought-after collectors' items today.

At the ceremonial opening of the museum at the Untertürkheim plant on 24 February 1961, Mercedes-Benz presented the 220 SEb Coupé. Its design and styling took their cue from the 220 SEb "Tailfin Saloon", so it was also assigned to the 111 series. On the full-length version of the 111 series frame-floor unit a fully fledged four-seater was created. Engine, suspension and the safety body principle were borrowed from the Saloon. The only major difference was at the same time a special technical feature: the 220 SEb Coupé was the first Mercedes-Benz production car to have disc brakes on the front wheels. It also had a padded steering wheel, 3-point seat belts and a new type of wedge-pin door lock that prevented the doors from bursting open in a collision. A little later the 300 SE Coupé with **118 kW** (160 hp), a member of the 112 series, debuted at the Geneva Motor Show. Its standard equipment included a four-speed automatic transmission, air suspension and power-assisted steering.

An **88 kW** (120 hp) six-cylinder served as drive for the 220 SEb Coupé. When production of the tailfin Saloon came to an end in 1965, the Coupé remained in the sales range along with the Cabriolet. However, the 2.2-litre engine was replaced by a 2.5-litre unit with **110 kW** (150 hp) and the model designation became 250 SE Coupé. In January 1968 the 280 SE Coupé with a newly developed six-cylinder engine with a displacement of 2.8 litres and **118 kW** (160 hp) replaced the 250 SE Coupé. At the same time the 3.0-litre variant was taken out of the line-up. In September 1969 a V8 engine with **147 kW** (200 hp) debuted in the 280 SE 3.5 Coupé as harbinger of a new engine generation.

The Mercedes-Benz coupés proved ideal for the growing clientele of professional high-mileage drivers. The consequence: more than ten times as many coupés from the W 111 and W 112 model series were produced as from the previous "Ponton" series – exactly 28,918 units.

In October 1971 Mercedes-Benz presented the 350 SLC of the next coupé generation at the Paris Motor Show. Unlike its predecessors, this model was not based on a luxury-class saloon, but shared the technical platform of the 350 SL Roadster. Apart from the fixed roof of the SLC, both 107 series variants were identical up to the rear edge of the door. The differences showed in the rear half of the car. A 36 millimetre longer wheelbase permitted designing the SLC as a fully fledged four-seater. Powered by a **147 kW** (200 hp) V8, the Coupé also shared a number of safety-related design details with the Roadster. For example, the fuel tank was fitted above the rear axle for collision protection. In the interior the heavily padded dashboard, deformable or recessed switches and levers and the new four-spoke safety steering wheel with impact absorber and wide passed boss made for greatest possible impact protection. The large tail lights were insensitive to soiling because of their ribbed surface.

From April 1973, a second V8 engine with a displacement of 4.5 litres and **165 kW** (225 hp) became available in the 450 SLC. A version of this engine with a lower-compression ratio and **143 kW** (195 hp), adapted to the US emission control laws, had been in service since July 1972 in the North American version of the 350 SLC. In July 1974 the six-cylinder 280 SLC with **136 kW** (185 hp) was added to the C 107 model range.

In September 1977, at the Frankfurt International Motor Show, Mercedes-Benz presented the 450 SLC 5.0 as new top model. Outstanding innovation: the 5.0-litre light-alloy engine with **177 kW** (240 hp), which later would enjoy a career in the S-Class and the SEC Coupé models. In 1980, in the wake of general model refinement measures the 450 SLC 5.0 became the 500 SLC. The 350 SLC was supplanted by the 380 SLC. Its 3.8-litre aluminium V8 developed **160 kW** (218 hp). In the ten years in which they were built a total of 62,888 coupés of the C 107 series were produced.

At the Frankfurt Motor Show in September 1981 the Coupé variants 380 SEC and 500 SEC of the C 126 series were presented. They were again based on the S-Class Saloon now, and not the SL, which between 1971 and 1981 also had been offered as SLC Coupé. The floor assembly was 85 millimetres shorter than in the Saloon. Nevertheless, the SEC Coupés were fully fledged four-seaters. Their design too, with its elegant, harmonious lines, took its cue from the four-door cars, but gave a sense of even more concentrated power and agility.

Of course, the Coupé also complied with the high safety standard of the S-Class Saloon. An interesting piece of equipment was an electrically operated belt feeder that was part of the standard appointments and had the job of bringing the seat belt into the field of view of the driver and front passenger and into a position where they could easily reach it. As optional extras an airbag for the driver and a belt tensioner for the front passenger were available.

V8 engines, thoroughly revised under the "Mercedes-Benz Energy Concept" to reduce fuel consumption and pollutant emissions, ensured dynamic traction. The 380 SEC Coupé developed **150 kW** (204 hp), the 500 SEC Coupé **170 kW** (231 hp). In 1985 a comprehensive package of refinement measures including a discreet facelift brought mainly a restructured engine range. New was the V8 engine with 4.2 litres displacement. The 5.0-litre engine was also modified; it now had an electronic ignition and an electronically-mechanically controlled injection system. The most spectacular new development was the 5.6-litre V8 that delivered **200 kW** (272 hp) and even **221 kW** (300 hp) in a version with a higher compression ratio (but without catalytic converter).

The fascination that the big new coupé exuded can be clearly seen especially in the figures: 74,060 units of the C 126 model series were built. These coupés, for some fans the "epitome of the touring car", rank among the sought-after Mercedes-Benz "young classics" today.

## **1992: a first twelve-cylinder**

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In January 1992 the North American International Auto Show in Detroit provided the stage for the premiere of the new SEC Coupé models of the C 140 series. Initially, Mercedes-Benz offered two variants: the 500 SEC with **235 kW** (320 hp) V8 engine and the 600 SEC with a V12 delivering **290 kW** (394 hp). They were based on the S-Class Saloon introduced in 1991. A distinctive design and clear, composed forms with discreet lines of force which exuded dynamism and unpretentious sportiness distinguished the new coupés.

As with its other car models, in June 1993 Mercedes-Benz introduced new model designations for the coupés of the S-Class. The 600 SEC, for instance, became the S 600 Coupé. To meet the high demand, in March 1994 the coupé family was beefed up with the **205 kW** (279 hp) S 420 Coupé.

The S 600 Coupé featured two fundamental innovations when it appeared: in May 1995 a completely new 5-speed automatic transmission with slip-controlled torque converter lockup clutch was introduced whose sophisticated electronic controls cut fuel consumption. An innovation of even more fundamental significance in historical terms was the Electronic Stability Program ESP<sup>®</sup>, which supports the driver in critical situations by counteracting an instability-creating force through selective sensor-controlled braking intervention, thus improving handling safety. Since then, ESP<sup>®</sup> is regarded as proof of future-minded safety engineering in vehicle manufacture and has gained acceptance throughout the industry.

In 1996 the model designations for the coupés were changed once more. Now the model series was dubbed CL, which was supposed to indicate that the big coupés have taken over the pacemaker function for a whole coupé family. 26,022 units of the C 140 were built.

From autumn 1999 the new CL Coupé of the C 215 series went on display in dealer showrooms. Initially there was only the CL 500 with V8 engine and **225 kW** (306 hp), to which the **270 kW** (367 hp) CL 600 with twelve-cylinder engine was added in early 2000. Design, engines and appointments of the CL provided excellent proof of the innovative prowess of the Stuttgart automaker. The long, flat bonnet, the dynamic tension created by the roof line, the distinctive rear end and the expressive twin headlamps characterised a design that radiated both elegance and sportiness. Dispensing with B-pillars made the basic body appear light.

The standard equipment included a comprehensive safety package with various airbags. A standard feature, unique in the world up until then, was the novel suspension system Active Body Control (ABC); it almost completely compensates for rolling and pitching motions during cornering, on moving off, and during braking. As standard the twelve-cylinder of the CL 600 had an automatic cylinder cut-out function that was also available as an optional extra for the eight-cylinder in the CL 500; it reduces fuel consumption in the partial load range. From autumn 2000 the CL 55 AMG "F1 Limited Edition" of 55 units was available. It was the first car in the world licensed for road use that had a brake system with ceramic brake discs. In 2001 the CL 63 AMG with **326 kW** (444 hp) followed.

In 2002 a facelift resulted in a discreetly changed front end and rear end. A major innovation was the V12 engine with twin turbochargers in the CL 600, which developed **368 kW** (500 hp) and delivered maximum torque of 800 Newton metres. From autumn 2002 a supercharged V8 engine with a displacement of 5.5 litres and **265 kW** (360 hp) powered the CL 55 AMG, and in autumn 2003 the **450 kW** (612 hp) CL 65 AMG was added; it delivered torque of 1000 Newton metres.

With the C 215 model series Mercedes-Benz continued its coupé tradition with undiminished success: through May 2006 48,000 units were built.

Highest exclusivity, sophisticated design and trailblazing high-end technology also distinguished the CL-Class of the C 216 series which drove into the public limelight in autumn 2006. Typical of the visual appeal of the new masterwork of the Stuttgart automaker is the interplay of clear-cut, taut lines with large tranquil surfaces. Familiar Mercedes features present themselves in a contemporary interpretation, reconciling tradition and modernity. Examples of this are the Mercedes-typical radiator grille with the wide chrome louvres, the fully retractable side windows without B-pillars, and the C-pillar which tapers towards the bottom (first seen in the 220 SEb Coupé in 1961).

Elegance in the interior too: through the large side window the gaze wandered over a beautifully designed dashboard, high-quality wood trim and soft leather upholstery. It became immediately clear that in the CL everything serves comfort and relaxation. Automatic climate control, COMAND with radio and CD/DVD player as well as a sliding glass sunroof were standard appointments that conduce to a fantastic driving experience.

As an optional extra, dynamic multicontour seats were available. In the CL 600 they were standard equipment. The list of technical innovations included the standard-fit Intelligent Light System with five different lighting functions that switch themselves on depending on the driving situation and the weather.

The anticipatory occupant protection system PRE-SAFE<sup>®</sup> installed at the factory was complemented by Mercedes-Benz for the first time with the PRE-SAFE<sup>®</sup> Brake, which initiates automatic, partial braking action in the acute risk of an accident. It works together with the Brake Assist PLUS (BAS PLUS), which warns the driver visually and audibly of an imminent head-to-tail crash and automatically calculates the braking pressure necessary to avert the crash. Both systems, as well as the Parking Guidance system newly developed for the CL, are based on radar technology.

One year after the debut of the C 216, as further innovation the radar-based Blind Spot Assist arrived.

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For the C 216 model series Mercedes-Benz again offered the most powerful engines in the entire range: the eight-cylinder in the CL 500 now delivered **285 kW** (388 hp). Under the bonnet of the prestigious CL 600 the twelve-cylinder biturbo engine, updated to **380 kW** (517 hp), developed its impressive power. Still more power was offered beginning in 2007 by the CL 63 AMG with **386 kW** (525 hp) and the CL 65 AMG with **450 kW** (612 hp).

#### **2010: new yardstick for efficiency among the luxury coupés**

From autumn 2010 the new generation of the C 216 takes on a role as trailblazer in the area of drive systems. Under the bonnet of the CL 500 BlueEFFICIENCY and the CL 500 4MATIC BlueEFFICIENCY a new V8 biturbo engine with BlueDIRECT technology unleashes its power. With its 4663 cubic centimetres displacement, the eight-cylinder engine produces **320 kW** (435 hp) so that despite 0.8 litres less displacement, it is still around 12 percent more powerful than its predecessor. At the same time, torque was raised from 530 Newton metres to 700 Newton metres – an increase of 32 percent. Combined NEDC consumption, on the other hand, drops by around 22 percent to 9.5 litres of premium petrol per 100 kilometres for the rear-wheel drive version.

The BlueDIRECT technology package of the V8 biturbo engine comprises a number of new developments which are unique in their combination. They include third-generation spray-guided direct injection featuring piezo injectors and multi-spark ignition with up to four ignition sparks within a millisecond. Together both enable an innovative combustion process called "homogenous split". The luxury coupé's technology package also includes the ECO start/stop function.

The **380 kW** (517 hp) twelve-cylinder biturbo remains the flagship model. From Mercedes-AMG come the high-performance coupés **CL 63 AMG** with **400 kW** (544 hp) V8 biturbo engine (5.5 litres displacement) and **CL 65 AMG** with **463 kW** (630 hp) twelve-cylinder (6 litres displacement). As option, for the CL 63 AMG the AMG Performance package, which involves an increase in power to **420 kW** (571 hp), can be ordered.

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In addition, with the Active Lane Keeping Assist and Active Blind Spot Assist two new driver assistance systems have their premiere in the CL (at the same time as in the S-Class). They are able to respond actively and act autonomously in the event an accident threatens, in order to avoid accidents or mitigate their consequences.

Model chronology

## The large Mercedes-Benz coupés

In production	Models	Engines	Qty.
<b>1952 – 1958</b> W 188	300 S (1952 – 1955) 300 Sc (1955 – 1958)	In-line 6, <b>110 kW</b> (150 hp) In-line 6, <b>128 kW</b> (175 hp)	314
<b>1956 – 1960</b> W 180/W 128	220 S (1956 – 1959) 220 SE (1958 – 1960)	In-line 6, <b>74 kW</b> (100 hp); from 8/1957: <b>78 kW</b> (106 hp) In-line 6, <b>85 kW</b> (115 hp); from 8/1959: <b>88 kW</b> (120 hp)	2081
<b>1961 – 1971</b> W 111/112	220 SEb (1961 – 1965) 250 SE (1965 – 1967) 280 SE (1968 – 1971) 300 SE (1962 – 1967) 280 SE 3.5 (1969 – 1971)	In-line 6, <b>88 kW</b> (120 hp) In-line 6, <b>110 kW</b> (150 hp) In-line 6, <b>118 kW</b> (160 hp) In-line 6, <b>118 kW</b> (160 hp) V8, <b>148 kW</b> (200 hp)	28,918
<b>1971 – 1981</b> C 107	350 SLC (1971 – 1980) 450 SLC (1972 – 1980)  280 SLC (1974 – 1981)  450 SLC 5.0 (1978 – 1980) 500 SLC (1980 – 1981) 380 SLC (1980 – 1981)	V8, <b>147 kW</b> (200 hp) V8, <b>165 kW</b> (225 hp); from 11/1975: <b>160 kW</b> (217 hp); from 1978: <b>165 kW</b> (225 hp) In-line 6, <b>136 kW</b> (185 hp); from 1976: <b>130 kW</b> (177 hp); from 1978: <b>136 kW</b> (185 hp) V8, <b>177 kW</b> (240 hp) V8, <b>177 kW</b> (240 hp); from 9/1981: <b>170 kW</b> (231 hp) V8, <b>160 kW</b> (218 hp); from 9/1981: <b>150 kW</b> (204 hp)	62,888
<b>1981 – 1991</b> C 126	380 SEC (1981 – 1985) 500 SEC (1981 – 1991)  420 SEC (1985 – 1991)  560 SEC (1985 – 1991)	V8, <b>150 kW</b> (204 hp) V8, <b>170 kW</b> (231 hp); from 1985: <b>180 kW</b> (245 hp) w. catalytic converter <b>164 kW</b> (223 hp); from 9/1987: <b>195 kW</b> (265 hp) w. catalytic converter <b>185 kW</b> (252 hp) V8, <b>160 kW</b> (218 hp); w. catalytic converter <b>150 kW</b> (204 hp); from 9/1987: <b>170 kW</b> (231 hp); w. catalytic converter <b>165 kW</b> (224 hp) V8, <b>200 kW</b> (272 hp); w. catalytic converter <b>178 kW</b> (242 hp); from 9/1987: <b>220 kW</b> (300 hp); w. catalytic converter <b>205 kW</b> (279 hp)	74,060
<b>1992 – 1998</b> C 140	S 420* (1994 – 1998) 500 SEC* (1992 – 1998) 600 SEC* (1992 – 1996)	V8, <b>205 kW</b> (279 hp) V8, <b>235 kW</b> (320 hp) V12, <b>290 kW</b> (394 hp)	26,022

<b>In production</b>	<b>Models</b>	<b>Engines</b>	<b>Qty.</b>
<b>1999 – 2006</b> C 215	CL 500 (from 1999) CL 600 (from 2000) CL 55 AMG (from 2000) CL 63 AMG (2001 - 2003) CL 65 AMG (from 2003)	V8, <b>225 kW</b> (306 hp) V12, <b>270 kW</b> (367 hp); from 9/2002: <b>368 kW</b> (500 hp) V8, <b>265 kW</b> (360 hp); from 9/2002: <b>368 kW</b> (500 hp) V8, <b>326 kW</b> (444 hp) V12, <b>450 kW</b> (612 hp)	48,800
<b>2006 – 2010</b> C 216	CL 500 (from 2006) CL 600 (from 2006) CL 63 AMG (from 2007) CL 65 AMG (from 2007)	V8, <b>285 kW</b> (388 hp) V12, <b>380 kW</b> (517 hp) V8, <b>386 kW</b> (525 hp) V12, <b>450 kW</b> (612 hp)	

\* as of 1996 with model designation CL

## New benchmark for efficiency in the luxury class

**With two all-new V6 and V8 direct petrol injection engines and the updated V6 BlueTEC diesel, starting immediately the Mercedes-Benz S-Class redefines the yardstick for efficiency in its segment: the 225 kW (306 hp) V6 petrol engine in the S 350 BlueEFFICIENCY obtains a combined fuel consumption of only 7.6 litres of premium petrol per 100 kilometres (NEDC). The reduction of fuel consumption by about 24 percent compared with the previous model makes the luxury saloon the most economical petrol-powered model in its category. The CO<sub>2</sub> emissions decline from 234 grams per kilometre to 177. The V8 biturbo engine of the S 500 BlueEFFICIENCY with peak output of 320 kW (435 hp) is content with 9.4 litres of premium petrol per 100 kilometres. This equates to a reduction in consumption of around 15 percent versus the predecessor; the CO<sub>2</sub> emissions drop from 258 to 219 grams per kilometre. Tops in economy is the new S 350 BlueTEC. With a combined consumption of only 6.8 litres of diesel fuel per 100 kilometres – this works out to CO<sub>2</sub> emissions of 177 grams per kilometre – it is eleven percent more economical than its predecessor and at the same time the most fuel-efficient S-Class of all time. Thanks to AdBlue® emission control the 190 kW (258 hp) V6 also ranks among the world's cleanest diesel engines and already meets the stringent EU6 standard now.**

Mercedes-Benz achieves this clear leap in efficiency in the petrol variants S 350 BlueEFFICIENCY and S 500 BlueEFFICIENCY through the combination of the standard automatic start/stop function with the extensively updated 7G-TRONIC PLUS 7-speed automatic transmission and the newly developed BlueDIRECT technology package, the heart of which is the third-generation spray-guided direct petrol injection including multiple injection and multi-spark ignition. The two petrol engines are representatives of a new Mercedes-Benz engine family with a large range of displacements and outputs. Its trademark is a modular concept which permits the flexible integration of turbochargers and a combination with 4MATIC all-wheel drive and hybrid modules.

## **S 350 BlueEFFICIENCY: up to 24 percent lower consumption**

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The design highlights of the 3.5-litre V6 in the S 350 BlueEFFICIENCY include a completely new air intake and exhaust system in conjunction with a variable resonance intake manifold and optimised inflow and backflow. Result: with the same displacement, the output compared with the previous **200 kW (272 hp)** model rose by 12.5 percent to **225 kW (306 hp)**, while maximum torque has increased by 5.7 percent to 370 Newton metres (predecessor: 350 Nm) and now is available over a broad engine speed range from 3500 to 5250 rpm.

Parallel to this substantial increase in power the Mercedes engineers achieved an even more impressive reduction in fuel consumption. The predecessor's NEDC consumption was already a good 10.0 litres of premium petrol per 100 kilometres, but now has been cut by almost a quarter. The new V6 petrol engine in the S 350 BlueEFFICIENCY is content with 7.6 litres per 100 kilometres. That adds up to savings of 2.4 litres or 24 percent and makes the S 350 BlueEFFICIENCY the most economical petrol model in the luxury class. The CO<sub>2</sub> emissions also have fallen by 24 percent - from 234 to 177 grams per kilometre. The S 350 BlueEFFICIENCY combines excellent consumption figures with dynamic performance, managing to accelerate from standstill to a speed of 100 km/h in 6.9 seconds. Top speed is 250 km/h (electronically limited).

The ultramodern V6 engine is naturally aspirated, but it is suitable for the future use of a turbocharger thanks to the modular design concept. The most striking change between the new V6 unit and its predecessor is a reduction in the V-angle between the cylinder banks from 90 degrees to 60 degrees. This enables the primary balancer shaft to be omitted, and as a result the driver registers an outstanding level of comfort.

## Key figures for the new V6 petrol engine

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Cylinder arrangement/number	V6
Displacement (cc)	3498
Bore (mm)	92.9
Stroke (mm)	86
Compression ratio	12.2:1
Output (kW at rpm)	225 at 6500
Torque (Nm at rpm)	370 at 3500-5250

### **S 500 BlueEFFICIENCY: more powerful, more economical, more efficient**

The new V8 biturbo engine in the S 500 BlueEFFICIENCY generates **320 kW** (435 hp) with 15 percent less displacement (4663 instead of 5461 cc), getting around **twelve percent more power** than its 285 kW (388 hp) predecessor. Torque rose from 530 to **700 Newton metres** – an increase of **32 percent**.

Despite substantial extra power, the Mercedes developers were able to cut the combined fuel consumption of the S 500 BlueEFFICIENCY noticeably. At 9.4 litres of premium petrol per 100 kilometres, fuel economy is 15.5 percent (short wheelbase) and 16 percent (long wheelbase) better than in the previous model. An outstanding figure for the luxury class, it is equivalent to CO<sub>2</sub> emissions of 219 grams per kilometre.

The excellent efficiency goes hand in hand with superior performance: the S 500 BlueEFFICIENCY sprints from zero to 100 km/h in impressive 5.0 seconds. Top speed is 250 km/h (electronically limited).

## Key figures for the new V8 biturbo engine

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Cylinder arrangement/number	V8
Displacement (cc)	4663
Bore (mm)	92.9
Stroke (mm)	86
Compression ratio	10.5:1
Output (kW at rpm)	320 at 5250
Torque (Nm at rpm)	700 at 1800-3500

The Mercedes-Benz engineers achieved the combination of higher output and more torque from a smaller displacement mainly through the use of two turbochargers – one per cylinder bank. They force the intake air into the eight combustion chambers at an overpressure of up to 0.9 bar. The turbochargers are designed so that they provide high torque at low engine speeds.

## BlueDIRECT technology makes V6 and V8 engines fit for the future

The power plants of the S 350 BlueEFFICIENCY and S 500 BlueEFFICIENCY are representatives of a new generation of BlueDIRECT V6 and V8 engines. With its new-generation V-engines, Mercedes-Benz is clearly demonstrating that with concerted further development, internal combustion engines still have a great deal of potential, and that V6 and V8 engines with their high level of refinement also have a future.

Centrepiece of the BlueDIRECT technology package is the improved **third-generation direct injection** with spray-guided combustion and piezo injectors. In combination with multi-spark ignition it taps further possibilities for improving consumption – in the V8 unit through a further developed homogeneous combustion process ("**homogeneous split**"); in the V6 engine through a new stratified combustion method with a much larger useful engine characteristic map and lean-burn combustion for optimum consumption

("homogeneous stratified mode"). As the name indicates, the HOS method is a combination of homogeneous-lean and conventional stratified combustion. The first injection takes place during the intake stroke so that a homogeneous base mixture is formed. The "stratified" injection proper takes place during the compression stroke prior to ignition, as map-controlled single or double injection.

Combining start-stop technology, shift point adjustment and thorough reduction of friction losses, the Mercedes developers have achieved improvements in road consumption of more than 20 percent. In addition they have reduced the power consumption of the engine accessories. Among other things the S 350 BlueEFFICIENCY and S 500 BlueEFFICIENCY get an optimised water pump with second-generation thermal management, a demand-controlled oil pump, a volume-controlled high-pressure fuel pump and an intelligent alternator management system with braking energy recuperation. To reduce the engines' fuel consumption further, the S 350 BlueEFFICIENCY and S 500 BlueEFFICIENCY also get the ECO start/stop function, which shuts off the engine when the car stops, at traffic lights for example.

### **S 350 BlueTEC: highly efficient, clean, powerful**

The new S 350 BlueTEC develops an output of **190 kW** (258 hp) from a displacement of 2987 cc. This is ten percent more than the previous model, which delivered **173 kW** (235 hp). The torque of the V6 diesel has increased by 15 percent from 540 to impressive **620 Newton metres**. Despite much improved performance, with a combined consumption of **6.8 litres** of diesel fuel per 100 kilometres the S 350 BlueTEC beats its predecessor by 0.8 litres or eleven percent, making it the most economical S-Class of all time. The CO<sub>2</sub> emissions likewise have fallen by eleven percent, from 199 to 177 grams per kilometre. The highly efficient V6 diesel gives the luxury saloon effortlessly superior performance: it sprints from zero to 100 km/h in 7.1 seconds; top speed is 250 km/h (electronically limited).

Moreover, the S 350 BlueTEC ranks among the world's cleanest diesel models: BlueTEC is a technology developed by Mercedes-Benz to reduce emissions from diesel vehicles, in particular nitrogen oxides. To this end AdBlue<sup>®</sup>, an aqueous urea solution, is injected into the exhaust flow. This releases ammonia, which converts up to 80 percent of nitrogen oxides into harmless nitrogen and water in the downstream SCR (Selective Catalytic Reduction) catalytic converter. As a result, the S 350 BlueTEC already complies with the emission levels which are planned for 2014 with the introduction of the EU6 standard. The AdBlue<sup>®</sup> tank is installed under the luggage compartment floor and has a capacity of 25.7 litres. The tank is replenished at the regular maintenance intervals every 25,000 kilometres.

#### Key figures for the new V6 diesel engine

Cylinder arrangement/number	V6
Displacement (cc)	2987
Bore (mm)	83
Stroke (mm)	92
Compression ratio	15.5:1
Output (kW at rpm)	190 at 3600
Torque (Nm at rpm)	620 at 1600-2400

#### Active Lane Keeping Assist and Active Blind Spot Assist

In parallel with the CL-Class, Mercedes-Benz is also introducing two new safety systems for the S-Class which can help to avoid dangerous situations and accidents. When the wheels pass over a broken lane marking, the system activates an electric motor in the steering wheel which triggers brief vibrations – a subtle but effective warning signal. **Active Lane Keeping Assist** takes effect when the vehicle unintentionally passes over a continuous line to the right or left of the lane. In this case it gently brakes the rear wheel on the opposite side of the vehicle to counteract the drift away from the lane. Active Lane Keeping Assist employs the Electronic Stability Program ESP<sup>®</sup> for this purpose.

**Active Blind Spot Assist** is now available as a further new feature for the S-Class. This system warns the driver by means of a red signal in the glass of the exterior mirror when it detects that changing the lane may lead to an accident. Close-range radar sensors scan the area directly alongside and behind the car for this purpose. If the driver ignores the warnings and a vehicle in the neighbouring lane comes dangerously near – when cutting in after overtaking, for example – gentle corrective braking intervention will take place via ESP® on the wheels on the opposite side of the vehicle. This results in slight yawing of the saloon around its vertical axis as a result of the varying brake force distribution. Where an accident is nevertheless unavoidable, braking intervention by Active Blind Spot Assist helps to reduce the severity of impact.

Active Lane Keeping Assist and Active Blind Spot Assist are available for the S-Class now as part of the Driving Assistance package Plus.

### **New leather appointments with stitching**

To personalise the interior of the S-Class, Mercedes-Benz is also offering new, high-quality leather appointments which underscore the luxury saloon's exclusive character. A defining feature is the contrasting stitching on the PASSION leather package and the Exclusive PASSION leather package (standard for S 600). Colours and scope of appointments vary according to upholstery and package contents.

The PASSION leather package features the stitching on the fine leather of the seats and armrests as well as on the top and bottom of the instrument panel support and the door panelling, all of which are finished in ARTICO, a man-made leather which is pleasant to the touch. The Exclusive PASSION leather package features seats, armrests, instrument panel support, door linings, ruffled pockets and a rear shelf in fine leather with contrasting stitching. Alcantara is used for the roof liner and to cover the A-, B- and C-pillars.

## **Tailor-made high-end sound system**

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The new Bang & Olufsen BeoSound AMG sound system tailored to the luxury saloon's interior is available as a further new feature for the S-Class (standard for S 65 AMG). A combination of 15 loudspeakers and two amplifiers with a total output of 1200 W ensures a thrilling quality of sound from this high-end system. The algorithm of the digital sound processor allows a choice between high-end studio sound and surround sound, and the audio output can be focused exactly on the seat positions of the driver, front-passenger, rear seats or the centre of the interior.

Music can be enjoyed on long trips without tiring the listeners, thanks in particular to the dynamic compensation of driving noise. The digital sound processor analyses all the frequency bands and increases the volume according to the vehicle's speed – via individual adjustment of each loudspeaker and the different frequency ranges.

The S-Class with the new BlueDIRECT petrol engines can be ordered starting at the end of September. The S 350 BlueTEC already is on display in the showrooms of the sales outlets of the Stuttgart car brand and its authorised dealers. The price is 76,279 euros.

**Engine**

Number of cylinders/arrangement		8/V, 4 valves per cylinder
Displacement	cc	4663
Bore x stroke	mm	92.9 x 86
Rated output	kW (hp)	320 (435) at 5250 rpm
Rated torque	Nm	700 at 1800-3500 rpm
Compression ratio		10.5:1
Mixture formation		Microprocessor-controlled direct petrol injection with direct-control 180-bar piezo injectors, biturbo system

**Power transmission**

Drive system		Standard drive system
Transmission		7-speed automatic transmission
Ratios	Final drive	2.65
	1st gear	4.38
	2nd gear	2.86
	3rd gear	1.92
	4th gear	1.37
	5th gear	1.00
	6th gear	0.82
	7th gear	0.73
	Reverse	-3.426/-2.23

**Chassis and suspension**

Front axle	Four-link suspension, Active Body Control	
Rear axle	Multi-link independent suspension, Active Body Control	
Braking system	Disc brakes all-round, front and rear internally ventilated, front perforated, electrically actuated drum-type parking brake at rear, ABS, Brake Assist, ESP®	
Steering	Rack-and-pinion with speed-sensitive power assistance, steering damper	
Wheels	8.5 J X 18 ET 43	
Tyres	255/45 R 18	

**Dimensions and weights**

Wheelbase	mm	2955
Track, front/rear	mm	1601/1607
Overall length	mm	5095
Overall width	mm	1871
Overall height	mm	1419
Turning circle	m	11.63
Boot capacity*	l	490
Kerb weight (EC)**	kg	2070
Payload (basis: ready-to-drive state as defined by EC)	kg	515
Perm. gross vehicle weight	kg	2585
Tank capacity/incl. reserve	l	83/11

**Performance and fuel consumption**

Acceleration 0-100 km/h	s	4.9
Top speed	km/h	250
Fuel consumption***	l/100 km	9.5-9.9
CO <sub>2</sub> emissions	g/km	224-232

\*acc. to VDA measuring method; \*\* incl. 75 kg for driver and luggage; \*\*\* combined

**Engine**

Number of cylinders/arrangement		8/V, 4 valves per cylinder
Displacement	cc	4663
Bore x stroke	mm	92.9 x 86
Rated output	kW (hp)	320 (435) at 5250 rpm
Rated torque	Nm	700 at 1800-3500 rpm
Compression ratio		10.5:1
Mixture formation		Microprocessor-controlled direct petrol injection with direct-control 180-bar piezo injectors, biturbo system

**Power transmission**

Drive system		Permanent four-wheel drive, front/rear torque distribution 45:55
Transmission		7-speed automatic transmission
Ratios	Final drive	2.65
	1st gear	4.38
	2nd gear	2.86
	3rd gear	1.92
	4th gear	1.37
	5th gear	1.00
	6th gear	0.82
	7th gear	0.73
	Reverse	-3.426/-2.23

**Chassis and suspension**

Front axle	Four-link suspension, anti-dive control, AIRMATIC air suspension, gas-filled shock absorbers, stabiliser
Rear axle	Multi-link independent suspension, anti-squat and anti-dive, AIRMATIC air suspension, gas-filled shock absorbers, stabiliser
Braking system	Disc brakes all-round, front and rear internally ventilated, front perforated, drum-type parking brake at rear, ABS, Brake Assist, ESP <sup>®</sup> , 4ETS
Steering	Rack-and-pinion with speed-sensitive power assistance, steering damper
Wheels	8.5 J X 18 ET 43
Tyres	255/45 R 18

**Dimensions and weights**

Wheelbase	mm	2955
Track, front/rear	mm	1601/1607
Overall length	mm	5095
Overall width	mm	1871
Overall height	mm	1419
Turning circle	m	11.63
Boot capacity*	l	490
Kerb weight (EC)**	kg	2120
Payload (basis: ready-to-drive state as defined by EC)	kg	435
Perm. gross vehicle weight	kg	2555
Tank capacity/incl. reserve	l	83/11

**Performance and fuel consumption**

Acceleration 0-100 km/h	s	4.9
Top speed	km/h	250 (limited)
Fuel consumption***	l/100 km	9.9-10.1
CO <sub>2</sub> emissions	g/km	237-242

\*acc. to VDA measuring method; \*\* incl. 75 kg for driver and luggage; \*\*\* combined

## Mercedes-Benz CL 600

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### Engine

Number of cylinders/arrangement		12/V, 3 valves per cylinder
Displacement	cc	5513
Bore x stroke	mm	82 x 87
Rated output	kW (hp)	380 (517) at 5000 rpm
Rated torque	Nm	830 at 1900-3500 rpm
Compression ratio		9.0:1
Mixture formation		Microprocessor-controlled petrol injection with hot film airflow measurement, biturbo system

### Power transmission

Drive system		Standard drive system
Transmission		5-speed automatic transmission
Ratios	Final drive	2.65
	1st gear	3.60
	2nd gear	2.19
	3rd gear	1.41
	4th gear	1.00
	5th gear	0.83
	Reverse	-3.16/-1.93

### Chassis and suspension

Front axle	Four-link suspension, Active Body Control
Rear axle	Multi-link independent suspension, Active Body Control
Braking system	Disc brakes all-round, front and rear internally ventilated, front perforated, electrically actuated drum-type parking brake at rear, ABS, Brake Assist, ESP <sup>®</sup>
Steering	Rack-and-pinion with speed-sensitive power assistance, steering damper
Wheels	Front: 8.5 J x 18 ET 43; rear: 9.5 J x 18 ET 43
Tyres	Front: 255/45 R 18; rear: 275/45 R 18

### Dimensions and weights

Wheelbase	mm	2955
Track, front/rear	mm	1601/1607
Overall length	mm	5095
Overall width	mm	1871
Overall height	mm	1419
Turning circle	m	11.63
Boot capacity*	l	490
Kerb weight (EC)**	kg	2185
Payload (basis: ready-to-drive state as defined by EC)	kg	435
Perm. gross vehicle weight	kg	2620
Tank capacity/incl. reserve	l	90/11

### Performance and fuel consumption

Acceleration 0-100 km/h	s	4.6
Top speed	km/h	250 (limited)
Fuel consumption***	l/100 km	13.8-14.4
CO <sub>2</sub> emissions	g/km	322-328

\*acc. to VDA measuring method; \*\* incl. 75 kg for driver and luggage; \*\*\* combined

## Mercedes-Benz S 350 BlueTEC

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### Engine

Number of cylinders/arrangement		6/V, 4 valves per cylinder
Displacement	cc	2987
Bore x stroke	mm	83 x 92
Rated output	kW (hp)	190 (258) at 3600 rpm
Rated torque	Nm	620 at 1600-2400 rpm
Compression ratio		15.5:1
Mixture formation		Common-rail direct injection, turbocharger, EDC

### Power transmission

Drive system		Standard drive system
Transmission		7-speed automatic transmission
Ratios	Final drive	2.65
	1st gear	4.377
	2nd gear	2.859
	3rd gear	1.921
	4th gear	1.368
	5th gear	1.000
	6th gear	0.820
	7th gear	0.728
	Reverse	-3.416/-2.231

### Chassis and suspension

Front axle	Four-link suspension, anti-dive control, AIRMATIC air suspension, gas-filled shock absorbers, stabiliser
Rear axle	Multi-link independent suspension, anti-squat and anti-dive, AIRMATIC air suspension, gas-filled shock absorbers, stabiliser
Braking system	Disc brakes all-round, front internally ventilated, drum-type parking brake at rear, ABS, Brake Assist, ESP®
Steering	Rack-and-pinion with speed-sensitive power assistance, steering damper
Wheels	8 J x 17 ET 43
Tyres	235/55 R 17

### Dimensions and weights

		<u>Short wheelbase</u>
Wheelbase	mm	3035
Track, front/rear	mm	1600/1606
Overall length	mm	5096
Overall width	mm	1871
Overall height	mm	1479
Turning circle	m	11.8
Boot capacity*	l	560
Kerb weight (EC)**	kg	1995
Payload (basis: ready-to-drive state as defined by EC)	kg	595
Perm. gross vehicle weight	kg	2590
Tank capacity/incl. reserve	l	83/11

### Performance and fuel consumption

Acceleration 0-100 km/h	s	7.1
Top speed	km/h	250
Fuel consumption***	l/100 km	6.8
CO <sub>2</sub> emissions	g/km	177-182

\* acc. to VDA measuring method; \*\* incl. 75 kg for driver and luggage; \*\*\* combined

**Engine**

Number of cylinders/arrangement		6/V, 4 valves per cylinder
Displacement	cc	3498
Bore x stroke	mm	92.9 x 86
Rated output	kW (hp)	225 (306) at 6500 rpm
Rated torque	Nm	370 at 3500-5250 rpm
Compression ratio		12.0:1
Mixture formation		Microprocessor-controlled injection system with hot-film air-mass sensor (HFM)

**Power transmission**

Drive system		Standard drive system
Transmission		7-speed automatic transmission
Ratios	Final drive	3.07
	1st gear	4.377
	2nd gear	2.859
	3rd gear	1.921
	4th gear	1.368
	5th gear	1.000
	6th gear	0.820
	7th gear	0.728
	Reverse	-3.416/-2.231

**Chassis and suspension**

Front axle	Four-link suspension, anti-dive control, AIRMATIC air suspension, gas-filled shock absorbers, stabiliser
Rear axle	Multi-link independent suspension, anti-squat and anti-dive, AIRMATIC air suspension, gas-filled shock absorbers, stabiliser
Braking system	Disc brakes all-round, front internally ventilated, drum-type parking brake at rear, ABS, Brake Assist, ESP®
Steering	Rack-and-pinion with speed-sensitive power assistance, steering damper
Wheels	8 J x 17 ET 43
Tyres	235/55 R 17

**Dimensions and weights**

		Short wheelbase	Long wheelbase
Wheelbase	mm	3035	3165
Track, front/rear	mm	1600/1606	1600/1606
Overall length	mm	5096	5226
Overall width	mm	1871	1871
Overall height	mm	1479	1479
Turning circle	m	11.8	12.2
Boot capacity*	l	560	560
Kerb weight (EC)**	kg	1910	1975
Payload (basis: ready-to-drive state as defined by EC)	kg	595	580
Perm. gross vehicle weight	kg	2505	2555
Tank capacity/incl. reserve	l	83/11	83/11

**Performance and fuel consumption**

Acceleration 0-100 km/h	s	6.9	6.9
Top speed	km/h	250	250
Fuel consumption***	l/100 km	7.6-7.9	7.7-8.0
CO <sub>2</sub> emissions	g/km	177-184	179-186

\*acc. to VDA measuring method; \*\* incl. 75 kg for driver and luggage; \*\*\* combined

## Mercedes-Benz S 500 BlueEFFICIENCY

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### Engine

Number of cylinders/arrangement		8/V, 4 valves per cylinder
Displacement	cc	4663
Bore x stroke	mm	92.9 x 86
Rated output	kW (hp)	320 (435) at 5250 rpm
Rated torque	Nm	700 at 1800-3500 rpm
Compression ratio		10.5:1
Mixture formation		Microprocessor-controlled direct petrol injection with direct-control 180-bar piezo injectors, biturbo system

### Power transmission

Drive system		Standard drive system
Transmission		7-speed automatic transmission
Ratios	Final drive	2.65
	1st gear	4.377
	2nd gear	2.859
	3rd gear	1.921
	4th gear	1.368
	5th gear	1.000
	6th gear	0.820
	7th gear	0.728
	Reverse	-3.416/-2.231

### Chassis and suspension

Front axle	Four-link suspension, anti-dive control, AIRMATIC air suspension, gas-filled shock absorbers, stabiliser
Rear axle	Multi-link independent suspension, anti-squat and anti-dive, AIRMATIC air suspension, gas-filled shock absorbers, stabiliser
Braking system	Disc brakes all-round, front and rear internally ventilated, front perforated, drum-type parking brake at rear, ABS, Brake Assist, ESP®
Steering	Rack-and-pinion with speed-sensitive power assistance, steering damper
Wheels	8.5 J x 18 ET 43
Tyres	255/45 R 18

### Dimensions and weights

		Short wheelbase	Long wheelbase
Wheelbase	mm	3035	3165
Track, front/rear	mm	1600/1606	1600/1606
Overall length	mm	5096	5226
Overall width	mm	1871	1871
Overall height	mm	1479	1479
Turning circle	m	11.8	12.2
Boot capacity*	l	560	560
Kerb weight (EC)**	kg	2010	2070
Payload (basis: ready-to-drive state as defined by EC)	kg	605	580
Perm. gross vehicle weight	kg	2615	2655
Tank capacity/incl. reserve	l	90/11	83/11

### Performance and fuel consumption

Acceleration 0-100 km/h	s	5	5
Top speed	km/h	250	250
Fuel consumption***	l/100 km	9.4-9.6	9.4-9.6
CO <sub>2</sub> emissions	g/km	219-224	219-224

\*acc. to VDA measuring method; \*\* incl. 75 kg for driver and luggage; \*\*\* combined