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Date:
October 26, 2009

Mercedes-Benz 124 series: An automotive milestone becomes a Young Classic

- **Mercedes-Benz introduces the designation E-Class in the 124 series**
- **Large diversity of models and body variants**
- **Innovations range from 4MATIC to clean diesel engines**

Stuttgart - When Mercedes-Benz introduced the 124 series saloons in November 1984 they caught the attention of both trade and public alike. But this premiere 25 years ago would not be the last, for during its lifetime until 1997 the series notched up a string of firsts. And for the first time in winter 2009, the 124 took its first steps to becoming a Young Classic. From 1993 the 124 series was designated the first E-Class, having already become the first Mercedes-Benz vehicle to feature the 4MATIC automatic all-wheel drive back in 1985, and in 1990 the Mercedes-Benz 500 E became the first midsize model to be equipped with a V8 engine. Such milestones provide the framework for the biography of this model series, which appeared not only as a Saloon, Estate, Coupé and Convertible, but also as chassis and long-wheelbase Saloon versions, and as such served up six major players to the Mercedes-Benz model initiative.

The first generation of the midsize series made its debut in late November 1984 in Seville, Spain. Mercedes-Benz presented the eagerly awaited new saloon (W 124 series) in the upper midsize segment as the 200 D, 250 D, 300 D, 200, 230 E, 260 E and 300 E models. In addition, there was a 200 E version built for export to Italy. In terms of design and engineering the series borrowed elements from the 190 model (W 201), the precursor of the C-Class built from 1982. Parallels with the compact class were evident, for example, in the use of high-strength steel and other weight-reducing materials.

In spite of the lightweight design, the Mercedes-Benz engineers made further improvements to vehicle safety – thanks in part to innovative development and design methods. For example, the 124 series was the first vehicle model subjected by Mercedes-Benz not only to classic crash testing but also to computerised accident simulation. The passenger cell was extremely rigid in terms of side impact and roll-over resistance, and was equipped with ingenious front and rear crumple zones. The saloons from the midsize series also fulfilled the criterion of the asymmetric head-on collision with 40 percent overlap at 55 km/h. In addition, potential contact zones with pedestrians and cyclists were designed to yield on impact should the situation arise.

Elegant lines for enhanced environmental performance

Developed by Bruno Sacco, Joseph Gallitzendörfer and Peter Pfeiffer, the thinking behind the design of the saloon was pragmatic and functional. The characteristic rear end, for example, was particularly advantageous in terms of drag. Aerodynamic optimisation in the new saloons (the drag

coefficient was cut from $c_d=0.44$ in the W 123 series to $c_d=0.29$ or 0.32 in the W 124 series, depending on engine type) reduced fuel consumption significantly compared with the predecessor model. In 1984 there were as yet few differences in design between the powerful six-cylinder models and the four-cylinder variants with moderate power output. Externally all models in the series were identical, with the exception of the rear silencer, which had a twin-pipe design in the six-cylinder models, and the louvre-like air intake vents in the front spoiler of the 300 D and vehicles fitted with air conditioning.

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The engineers developed numerous engines for the 124 series from scratch. All new, for example, were the six-cylinder direct injection engines in the 260 E models (125 kW) and 300 E (140 kW). All three compression ignition engines for the new 124 diesel generation – the 200 D (53 kW), 250 D (66 kW) and 300 D (80 kW) – were designed as a modular series.

The eccentric-sweep panoramic windscreen wiper made its debut in the W 124. This cleaned 86 percent of the windscreen – the largest swept area for any passenger car worldwide at the time of the launch of the W 124. Outstanding ride characteristics, on the other hand, were supplied by the tried-and-tested front and rear axle design from the compact class. This incorporated a shock absorber strut independent front suspension with anti-dive control and an independent multi-link rear suspension.

The Saloon's big brother: the Estate

The history of the 124 series is characterised by a previously

unrivalled diversity of models, body styles and innovations. The presentation of the Estate (S 124 series) in September 1985 at the International Motor Show (IAA) in Frankfurt am Main represented an important step towards the assured style of the extended 124 family. The Estate was largely identical to the Saloons in terms of technological and stylistic design. Apart from modifications to the rear, the raised roof and other concomitant changes, there were no differences to the body. The only alterations to the major assemblies, braking system and chassis were to adapt them to the increased payload; otherwise they were taken from the Saloons virtually unmodified. Depending on engine type, the drag coefficient of the Estate model ranged from $c_d=0.34$ to 0.35.

Where possible the designers also incorporated into the Estate the safety standards achieved in the Saloons. In particular, they introduced the latest findings from safety research into the development of the rear body overhang, a critical area for estate car rear ends. One example of this was the fuel tank, which featured slanting abutting surfaces. This ensured that in the event of a rear-end collision involving deformation of the longitudinal members, the tank would be displaced downwards and held in check by arrester cables to avoid the possibility of contact with the road surface.

The close relationship between Saloon and Estate was evident in the engines with which they were equipped. The original Estate range consisted of eight models, which – with one exception – used engines that also featured in the Saloons. The 105 kW 3-litre six-cylinder turbodiesel used in the 300 TD TURBO was developed by the Mercedes-Benz

engineers from the naturally-aspirated Saloon unit. In this modified form, the turbocharged compression-ignition engine was used in the export version of the 300 SDL from the S-Class.

Driving elegance with two doors: the Coupé

In 1987 Mercedes-Benz expanded the model programme of the 124 series further still. First, in March, two Coupé models made their debut at the Geneva Motor Show, bringing to three the number of body variants on offer. As with the 123 series, there were close technical and stylistic similarities with the Saloon. However, the floor assembly in these new models was modified in such a way as to give the Coupé a wheelbase that was shorter by 8.5 centimetres. This served to underline its sporty nature and made the two-door vehicle a completely independent body variant in terms of design and form.

Reinforced A-pillars, side skirts and doors and a particularly high proportion of high-strength steel served to compensate for the absence of B-pillars. One characteristic design element that marked out the Coupés from the other body variants were the rub strips with integrated side-skirt trim. Positioned between the wheel cutouts at bumper height, these created a visual link between the front and rear aprons and were similarly painted in contrasting metallic colours.

The model range initially included the 230 CE and 300 CE models. Their engines, a 2.3-litre four-cylinder and a 3-litre six-cylinder with mechanically/electronically controlled fuel injection, were the same as in the respective saloon versions. And in

terms of all other mechanical components, the Coupés were identical to their four-door counterparts. The only visible features that distinguished the models were the twin-pipe exhaust of the six-cylinder and the vehicle identification plate.

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For the joy of open-topped driving: the Convertible

In September 1991 Mercedes-Benz premiered another body variant, the 300 CE-24 convertible, production of which began in 1992. After an interlude of around 20 years, a four-seater convertible was once again available in the midsize class. The car was based on the Coupé, although preparation for its role as an open-topped vehicle involved considerable design investment. Around 1,000 parts had to be redesigned just to strengthen the body alone. For example, the A-pillars were welded to interior steel sections at their weakest point to form a rigid unit.

A full safety system was achieved by combining this A-pillar with an automatic roll-over bar. Created specifically for the 300 CE-24 Convertible and positioned behind the rear seats, this linear roll-over bar extended almost vertically upwards within 0.3 seconds at the onset of a rollover incident. The fully retractable soft top featured a compelling wealth of ingenious technical detail – including, for example, a heated rear windscreen made of safety glass and with a double frame fitted flush to the outer skin, offering an undistorted rear view.

For special purposes: chassis with partial body

As had been common with the Mercedes-Benz midsize series

for decades, the 124 series chassis also came with a partial body, ready for domestic or foreign coachbuilders to develop into ambulances, hearses or other special purpose vehicles. The novelty in this case, however, was that these chassis were now based on the Estate models and produced at the same plant in Bremen. In addition to the normal length vehicle, there was also a longer wheelbase variant.

From 1989 onwards there was also a long-wheelbase Saloon. This six-door version was 80 centimetres longer than the series Saloon in overall length and wheelbase.

Milestones in safety and environmental protection

The 124 series set numerous technical milestones. Among the most notable premieres was the introduction of the 4MATIC automatic four-wheel drive system in 1985. This all-wheel system involved a complex electronic control unit and a full additional front-wheel drive with transfer case and differential. In addition to the 4MATIC automatic four-wheel drive, the “Mercedes-Benz dynamic handling concept” also included an automatic locking differential (ASD) and acceleration skid control (ASR) – meaning that in this package Mercedes-Benz offered three stepped automatic electronic dynamic handling systems – all of which used signals from the anti-lock brake system ABS.

Also in 1985, the Stuttgart brand offered an optional closed-loop emission control system with three-way catalytic converter for all petrol-engined models in the 124 series except the 200 model

equipped with carburettor. From September 1986 onwards the catalytic converter then became standard-fit, and even the carburettor model in the 124 series was now available with emission control system.

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Living development of a series

During its twelve-year production period the 124 series was regularly improved and further developed by the Mercedes-Benz engineers. This manifested itself in new models, as well as in technical innovations. These included, for example, the 300 D Turbo and 300 D Turbo 4MATIC saloons, introduced in 1987, with turbodiesel units from the corresponding estate models. Then in 1988 at the Paris Motor Show came the 200 E (hitherto produced only for the Italian market) and 250 D (featuring a modified version of the turbocharged 2.5-litre diesel engine from the compact class).

In September 1988 Mercedes-Benz introduced diesel engines for the 250 D and 300 D Turbo with redesigned prechambers and oblique injection for more efficient combustion. This reduced particulate emissions and at the same time boosted output. Moreover, in September 1988 all models in the series were given an enhanced standard equipment package, including anti-lock brakes (ABS) and a heated right-side exterior rear mirror.

As part of the "Diesel '89" initiative, in February 1989 the non-turbocharged diesel passenger cars were equipped with revised engines. These also featured the new prechambers with oblique injection, which gave rise to improved emission levels and

output. Emissions were further reduced by means of a complex emission control system, which combined an oxidising catalytic converter specially designed for diesel engines with a carefully tuned exhaust gas recirculation unit. This highly efficient system was available from October 1990 as optional equipment for diesel passenger cars with naturally-aspirated engines, and six months later also for turbocharged models.

The first model refinement package

In September 1989 Mercedes-Benz presented a completely revised model programme for the midsize category at the IAA International Motor Show Frankfurt. The focus of the model refinement package was on stylistic revisions to the body and a redesign of the interior. The most distinctive feature of the facelifted models was the lateral rub strips with integrated side-skirt trim. The newly designed interior benefited from enhanced seats and many detailed improvements.

The revised model programme for the 124 series offered five entirely new models. Now for the Saloon, Coupé and Estate there was the 3-litre, six-cylinder engine with four-valve technology and adjustable intake camshaft from the 300 SL-24 model. But on account of different installation conditions it was not possible to install the same catalytic converter cross-section from the SL in the 300 E-24, 300 CE-24 and 300 TE-24 models. For this reason rated power was 162 k – 8.1 kW lower than in the sports car (170 kW).

Alongside these top-of-the-range models from the series, the

Stuttgart company also introduced a fourth body variant in the midsize class – the long wheelbase Saloon. This restored a long version to the sales programme after an absence of four years. The long body was developed in close cooperation with the Binz firm of bodybuilders based in Lorch, who then took care of the body-in-white process for series production. The wheelbase was increased by 80 centimetres to 3.60 metres, and the overall length grew by the same amount. In contrast to their predecessor models, the long-wheelbased 250 D and 260 E came with six doors and a full central seat bench, which in terms of seat depth and height of backrest virtually matched that in the rear. Series production of the long saloons began in May 1990.

Top sports car from the midsize series

Available exclusively as a saloon, the 500 E made its debut at the Paris Motor Show in October 1990 – this was the new top-of-the-range model in the 124 series and also the first E-Class to feature a V8 engine. Series production began in February 1991. Externally the 500 E was at first sight no different to its sister models. That merely lent greater emphasis to inner values, however. The newcomer was equipped with a 240 kW 5-litre, four-valve V8 engine which was based on the tried-and-tested power unit from the 500 SL and delivered breathtaking performance. In conjunction with a four-speed automatic transmission the Saloon could reach 100 km/h from a standing start in 5.9 seconds, its top speed was automatically limited to 250 km/h. Standard equipment included acceleration skid control (ASR) to prevent the drive wheels from spinning even at full acceleration.

To improve emissions behaviour, the volume of the double catalytic converter was increased from 3.9 to 5.8 litres; the system was supported by secondary air injection and exhaust gas recirculation. The 500 E for the first time used a new variant of the V8 four-valve unit, featuring a different fuel injection system, modified crankcase, Bosch LH-Jetronic electronically controlled fuel injection system and with the same engine block height as the 4.2 litre variant.

The distinctive features of the 500 E included subtly widened wings, fog lamps integrated into the front apron and 16-inch eight-hole alloy wheels with wide-base tyres measuring 225/55 ZR 16. The body was set 23 millimetres lower in comparison to other models, and to compensate for spring contraction under load the rear axle was equipped as standard with a hydropneumatic self-levelling rear suspension.

Bestseller reaches the two million mark before second facelift

The two millionth vehicle in the 124 series came off the production line in June 1992. Just a few weeks later the midsize series was subjected to a second model refinement package. This time Mercedes-Benz placed the focus on engine and equipment. The petrol versions were unveiled with a thoroughly revised engine range, which had now switched completely to four-valve technology. This meant all four and six-cylinder units now had the same bore, thereby rendering production more flexible and economic.

Apart from the new engine range for the petrol engines, the

model refinement also included a significantly stepped-up standard equipment package for all midsize models. As of October 1992, standard-fit equipment included airbags, central locking and electrically adjustable exterior mirrors on both sides. In addition, the four-cylinder models were equipped with five-speed transmission at no extra cost.

The new 400 E model appeared on the European market at the same time as the facelifted midsize models. This variant of the W 124 had already been produced for export to the US and Japan in September 1991. As the new top-of-the-range vehicle among the large-displacement models, the car boasted the familiar 4.2-litre V8 engine with four-valve technology and 205 kW.

A world first in 1993 was the use of four-valve technology in five and six-cylinder naturally-aspirated diesel engines. That ensured not only increased torque and output, but also reduced fuel consumption at full load by up to 8 percent. In addition, the optimised combustion process meant that exhaust particulate emissions were reduced by 30 percent.

Name change for the 124 series: the first E-Class

A new nomenclature came into force for the 124 series with effect from the sales launch of the newly revised models in June 1993. In line with the S-Class and the new C-Class, the midsize category was henceforth renamed the E-Class. This meant that model designations were now also part of a modified system, in which the class to which a vehicle belonged was represented by a letter of the alphabet. This letter was followed by a three-digit

number, based as previously on the engine displacement. The coding of body variants such as coupé and estate was now abandoned, since these were clearly identifiable. In the case of diesel-powered models, the word “Diesel” or “Turbodiesel” placed after the three-figure number replaced the earlier abbreviation.

Along with the change in nomenclature, the most striking feature of the modified vehicles was the radiator grille, redesigned in line with the S-Class. This so-called integrated radiator had a much thinner chrome frame compared with the previous design, and the Mercedes star was positioned – as with the S-Class saloons – on the bonnet. The headlamp unit was also modified: the front indicator lights were given colourless lenses, with bi-chromatic covers for the rear light cluster.

There were also changes to the shape of the boot lid, wheels and bumpers. The pressed steel wheels were fitted with six-hole wheel trims and the bumper mouldings now appeared in the same colour as the add-on parts. The rear bumper moulding was also wrapped round as far as the wheel cutouts.

At about the same time the E 60 AMG appeared on the scene as the new top-of-the-range model, offered by the company-owned tuner with the 6-litre V8 M 119 engine. This sports saloon developed 280 kW at 5,600/min. AMG also boosted the output of the Coupé and Convertible models: these also appeared on the market in 1993 as the E 36 AMG, delivering 200 kW at 5,750/min.

In June 1995, two years after implementation of the last comprehensive model refinement measures, Mercedes-Benz introduced the E-Class saloons of the 210 series, the successor to the 124 series. Production of the 124 series Saloons ended a short time afterwards, depending on the model between June and August 1995. Production of the Estate continued until 1996. Mercedes-Benz also continued to produce ckd (“completely knocked down”) parts kits of the E 250 Diesel and E 220 until 1996 and shipped them for assembly to Pune in India. The last Convertible finally rolled off the production line in 1997.

During a period of over eleven years, production figures amounted to 2,058,777 Saloons, 340,503 Estates, 141,498 Coupés, 6,343 Convertibles, 2,342 long-wheelbase Saloons and 6,398 chassis with partial bodies for special purpose vehicles – 2,555,861 vehicles in total.

With the end of production, the Stuttgart company opened a new chapter in the ‘auto’-biography of their 124 series. With its classic lines and multiple body variants, the series has already started to establish itself as an attractive, Young Classic.

And on its 25th birthday in 2009, the first cars from the series officially achieved the rank of ‘youngtimer’ or recent classic – a piece of automotive heritage with youthful appeal. This is also reflected in the collection housed at Mercedes-Benz Young Classics, where dream cars such as the E 500 and 300 CE wait to transport enthusiasts on a trip down memory lane to revive the history of the 124 series.

Further information on Daimler is available on the internet at:
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