Mercedes-Benz

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Aerodynamics at Mercedes-Benz: Less air resistance, more efficiency and lower consumption

Contents

The descriptions and data in this press kit apply to the international model range of Mercedes-Benz. They may vary from country to country. Further, country-specific information about the vehicles offered, including the WLTP values, can be found at www.mercedes-benz.com.

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Less air resistance, more efficiency

Aerodynamics at Mercedes-Benz: the added value

- **Diverse advantages in everyday driving: increased range, more comfort and safety**
- **Long tradition: aerodynamic bests and modern measuring equipment**
- **Detailed aerodynamic optimisation: the new CLA with EQ Technology**

Low air resistance means high efficiency. This makes aerodynamic behaviour crucial, especially for electric vehicles. Reducing the drag coefficient by just 0.01 increases long-distance range by about 2.5 percent. Based on an annual mileage of 15,000 kilometres, corresponding aerodynamic optimisation results in an extra 375 kilometres of distance.

Mercedes-Benz recognised early on that aerodynamics are key to efficiency. Accordingly, the list of models with top aerodynamic performance is long: It initially ranges from the W 125 of 1937[1] to the 540 K "Streamliner" of 1938 and the C111[2] from the 1970s to the W124 of 1984, which with a C_d of 0.29 was the first production car to fall below 0.30. More recently, the CLA of 2013 with a C_d of 0.22, the EQS with 0.20, and the current CLA with EQ Technology with a class-leading 0.21 should be mentioned. Another aero champion is the VISION EQXX from 2022. With a C_d value of 0.17, this technology platform offers the wind even less air resistance than an American football. While the focus of the VISION EQXX was on efficiency itself, the AMG GT XX was primarily about ensuring that efficiency at speeds of over 300 km/h. Thanks not least to its C_d value of 0.19 and intelligent aerodynamics, the AMG secured 25 long-distance world records on the Nardò test track in August 2025.

Previously, and especially in racing, achievable speeds and high cornering speeds, i.e., downforce, were the focus. Today, the main focus is on energy consumption and range while maintaining Mercedes' famous and much-loved driving characteristics. But not only in terms of air resistance, but also in the other aerodynamic disciplines of aeroacoustics, keeping the vehicle clean, and open-top driving comfort, Mercedes-Benz models have been at the forefront for many decades. Further information on the aerodynamic sub-areas can be found here.

This is also due to the high level of development effort that the brand with the star puts into this area: The "Large Wind Tunnel" in Untertürkheim was the world's first of its kind for automobile development. The first documented measurement took place there over 80 years ago on February 5, 1943. The "Large Wind Tunnel" is still in use. In 2013, Mercedes-Benz once again took the lead in aerodynamic testing with the aeroacoustic wind tunnel at the Sindelfingen Development Centre. Further information on the measuring equipment can be found here.

Small details, big impact: aerodynamic optimization of the CLA

As great as the added value is in everyday driving, the aerodynamic optimizations of the vehicles are just as extensive, as shown below using the current example of the all-new electric CLA. With a C_d value from 0.21, this all-electric model is one of the best in its class. Within the series, the spread is also very small. This is partly due to the wide range of aerodynamically optimised wheels. These include, for the first time, a bicolour full cover for light-alloy wheels. Compared to a conventional wheel, it performs up to 15 C_d points better; compared to an already optimised aluminium aero rim, the advantage is still up to two C_d points. In addition, the aerodynamicists have optimised the wheel spoilers in front of the front and rear axles in detail across all inch sizes, thus minimising the influence of the wheels and tyres on air resistance.

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[1] On January 28, 1938, the Mercedes-Benz W 125 record car set a speed world record on public roads with its drag coefficient (Cd value) of 0.17: Rudolf Caracciola reached a speed of 432.7 km/h on the A5 between Darmstadt and Frankfurt.
[2] The record-breaking C111-III had a drag coefficient of 0.183.

In the area around the radiator grille and headlights, the joints were optimally placed and partially sealed. The underbody concept of the EQS and EQE has been further developed. The very smooth underbody is almost completely closed and the spring control arms and tie rods are also covered. The rear wheel cover is fixed to the body shell, so it has no joints to the surrounding components and therefore does not move with the axle when it compresses, for example. In order to avoid any aerodynamic compromises, Mercedes-Benz even installs two diffuser variants on the rear of the all-electric CLA: for models without and with a trailer hitch.

For increased range, safety, and comfort

Aerodynamics at Mercedes-Benz: the aerodynamic disciplines.

- Most important lever for efficiency: flow optimisation
- Crucial for long-distance comfort: aeroacoustics
- Contribution to active safety: keeping the vehicle clean

On long-distance journeys, aerodynamics is by far the biggest influencing factor on efficiency. One point in the C_d value, i.e., one thousandth (0.001), is equivalent to ten kilograms of weight saving in the WLTP cycle. Or, to put it another way: one C_d point less means approximately one kilometre more range for electric cars. A lower C_d value is particularly advantageous at higher speeds and contributes to Mercedes-Benz's customer-oriented “Real Life Efficiency” philosophy. This is because air resistance increases with the square of the speed. This means that if the speed doubles, the air resistance quadruples.

The dimensionless drag coefficient C_d is the measure of the aerodynamic quality of a body and thus also of an automobile. The so-called frontal area indicates how much frontal area a car presents to the wind. Previously, it was determined by projecting the shadow of the body with a very distant lamp onto a transparent screen. Then the outline was drawn and the total area was calculated from the individual segments. Today, the frontal area is scanned with laser light barriers. The frontal area multiplied by the C_d value gives the air resistance.

The good flow characteristics make a decisive contribution to low energy consumption under everyday conditions. But safety, comfort and the environment also benefit from the elimination of disruptive air turbulence. Low lift values ensure good road holding, and low wind noise ensures a high level of relief and long-distance comfort. In this way, passengers can complete even long journeys in a relaxed and safe manner.

Mercedes-Benz optimises the flow characteristics of the vehicles down to the smallest detail through a large number of calculation loops, simulations (see paragraph after next) and measurements in the wind tunnel in Sindelfingen. In addition to the external shape, it is usually many small measures that lead to top aerodynamic values. These include a reduction in frontal area, an extensive sealing concept and the panelling of the underbody. Special wheel spoilers at the front and rear often help to ensure that the air flows around the wheels with as little loss as possible. Aerodynamic fine-tuning also takes place on rims and tires. A louvre system behind the radiator grille is available for many models, depending on the market, which regulates the flow through the engine compartment as required. This avoids unnecessary flow and thus an increase in consumption.

For early-staged optimisations: extensive simulation

While the flow behaviour was optimised in early development phases using models in the old wind tunnel in Untertürkheim, this fundamental work is now carried out exclusively with simulation. Already at an early stage, the three-dimensional flow field that fundamentally surrounds vehicles is calculated on high-performance simulation clusters using CFD (Computational Fluid Dynamics).

Shortly after the start of the project, in the phase of the dimensional concept, several extensive DOE (Design of Experiments) studies with up to 250 calculations per study are usually carried out based on the predecessor. The aerodynamics engineers specify the parameter space of certain components, e.g. for the possible height of the trunk lid.

Such a DOE investigation takes several days and completely covers the specified parameter space. Based on these simulations, a global or local optimum can then be calculated, or, much more importantly in this phase, the influence of the individual parameters and their mutual dependencies on air resistance can be determined.

With the help of the DOE method, concrete aerodynamic requirements can be reported back to and discussed with the employees in the area of dimensional concept as well as with the design department at this very early stage.

In recent years, the aerodynamics experts at Mercedes-Benz have intensively further developed the automated calculation processes including DOE. The path to the aerodynamics world record of the EQS required several 1,000 calculation runs in the virtual wind tunnel with approximately 700 CPU cores per calculation.

For a quiet interior: Aeroacoustics and psychoacoustics

In aeroacoustic development, Mercedes-Benz always works on two tracks: On the one hand, as little noise as possible should be generated at the source, i.e., when the air flows around the vehicle's outer skin with all attachments. As early as the early development phase of a new model, the engineering team therefore begins to design the geometry dimensions that are particularly relevant for this, for example on the A-pillars and the exterior mirrors.

The pre-design is carried out using a Computational Fluid Dynamics (CFD) simulation, with detailed simulations on the particularly critical vehicle areas and with the help of our own 1:1 hard models in the aero wind tunnel. In combination with an array consisting of 350 microphones, local sound sources on the vehicle's outer skin can be made visible in three dimensions. In this way, even the smallest details in important areas can be developed at an early stage.

On the other hand, the quality of the sealing and sound insulation makes a decisive contribution to ensuring that unavoidable wind noises are no longer perceived or are not perceived as disturbing in the interior. A basic prerequisite for a low wind noise level in the interior is wind-tight door and window seals. This applies in particular to vehicles with frameless side windows. With artificial heads, even the smallest weak points can be specifically located, which are then eliminated as best as possible by technical solutions.

Some car magazines use a sound pressure level meter for tests. However, such measurements only incompletely reflect reality, because the human ear is a master of localising disturbing noises. Mercedes-Benz therefore also specifically investigates the psychoacoustically relevant effects and the localizability of disturbing noises. Based on tests with test subjects, the company's experts have even defined their own target index. Its weighted measured variables cover the entire frequency spectrum of human hearing. For example, the following variables and their effects are given consideration:

- Loudness [sone]: Representation of human loudness perception;
- Sharpness [acum]: Classification of noises from dull to sharp, higher-frequency components significantly influence the sharpness;
- Articulation index AI [%]: Speech intelligibility, focusing in particular on the area of best human hearing. The higher the value, the better conversations can be held and understood.

The measurements are usually carried out in the wind tunnel with so-called binaural artificial heads. There, the microphones sit in simulated ear canals, which allows for ear-accurate recordings. Depending on the phenomenon being investigated, the artificial heads sit in the driver's position or take a seat on the other seats in the vehicle. The measurement results then provide a realistic indication of how loud or quiet, disturbing or pleasant the passengers perceive the noise in the interior.

For a clear view: Keeping the windows clean

Having the cleanest possible windows and exterior mirror glass and thus optimal visibility under all conditions serves active safety. For this reason, the aerodynamic discipline of keeping the vehicle clean has always enjoyed special attention at Mercedes-Benz. In order not to burden the highly sensitive measuring technology and the running belts of the aeroacoustic channel in Sindelfingen with contamination tests, these are still carried out in the “Large Wind Tunnel” in Untertürkheim (see special chapter).

Pollution can be caused by rain, vehicles in front or droplets whirled up by the vehicle's own wheels. In the wind tunnel, this contamination is made visible with the help of fluorescent liquid. The aim of the development work is to direct the water in such a way that the relevant fields of vision ideally remain clean. For this purpose, the aerodynamicists optimised, among other things, the contour of the A-pillars with integrated components as well as the shape of the exterior mirrors and window frames or the trim strips on frameless doors.

For example, minor geometric changes to the mirror housing and detailed optimisations with seals and a special water deflector strip can significantly reduce contamination on the side window. Mercedes-Benz has the requirement that there must be no impairment of visibility due to spray, rivulets, or individual drops in the so-called core viewing area of the side window and on the exterior mirror glass.

Calmness when driving open: high draft-free comfort

In convertibles and roadsters, the aerodynamicists at Mercedes-Benz pay particular attention to what is known as draft-free comfort, i.e., an interior that is as wind-free and pleasantly tempered as possible. For example, the CLE Cabriolet comes standard with AIRSCARF® neck-level heating and the AIRCAP® electric wind deflector system. Both systems make open-top driving pleasant even in cool outside temperatures. The AIRSCARF® surrounds the neck and throat of the front occupants with pleasant warmth even in unfavourable wind conditions.

AIRCAP® can be extended at the touch of a button and then significantly reduces air turbulence in the interior of the four-seater. The system consists of two components: a wind deflector that can be extended by several centimetres with a net in the roof frame and a wind deflector that can also be extended behind the two rear seat headrests.

When extended, however, AIRCAP® is a potential source of noise. In the wind tunnel, the aerodynamicists therefore spent a long time fine-tuning the design of the system and its surroundings, thus reducing the noise to a minimum. The experts optimised, among other things, the choice of mesh fabric, the geometry of the fin, and other radii and shapes. The way the mesh fabric is flowed through and how both AIRCAP® components interact was also investigated and adapted to customer needs.

Advanced measuring device and modern methods

Aerodynamics at Mercedes-Benz: the wind tunnels and measuring devices

- Storm on command: the wind tunnels in Sindelfingen and Untertürkheim
- Weather as desired: the climate wind tunnels
- All ears: microphones and measuring dummies

For many decades, the experts at Mercedes-Benz have been optimising the aerodynamic properties of new vehicle models. Advanced measuring equipment and methods contribute to this. This includes in particular the aeroacoustic wind tunnel in Sindelfingen. With its very good flow quality, very low background noise, sophisticated road simulation and high efficiency, it set standards when it was commissioned in 2013. The facility is still one of the most powerful and quietest of its kind in the world. It also offers a particularly high level of simulation quality.

The wind tunnel follows the “Göttingen design”, which means that after the measuring section, the air is directed back to the blower and accelerated again, which saves a lot of energy. The blower has a diameter of nine metres and has 18 blades that set the air in motion. With a maximum torque of 202,150 Nm, the electric drive motor has about a thousand times the torque of a well-motorised vehicle. At a wind speed of 250 km/h, the power consumption is five megawatts. The blower then rotates at 238 revolutions per minute and the volume flow then reaches 2,000 m³ or about three single-family homes per second. The maximum wind speed is 265 km/h.

An air temperature of 23 to 24°C is maintained in the wind tunnel. In order to be able to measure precisely even in winter outside temperatures, the concrete tube of the channel is surrounded by a building and is therefore insulated. Before the air accelerated by the blower reaches the measuring section via a nozzle area of 28 m², it must be straightened and smoothed with rectifiers and sieves in order to eliminate disruptive turbulence and eddies. For use as an acoustic channel, in which the wind noises are measured inside and outside the test vehicle, extensive noise insulation measures have been integrated. Even at 140 km/h, the air therefore flows through the measuring section in a whisper-quiet manner.

Measuring section: five running belts up to 265 km/h

The centerpiece of the 19-metre-long measuring section of the wind tunnel is the approximately 90-ton treadmill-balance system with turntable. The new wind tunnel has a five-belt system to simulate the road: a small treadmill runs under each wheel and a nine-metre-long and over one-metre-wide centre treadmill runs between the wheels. All five belts run synchronously with the wind and thus represent exactly the same conditions as on the road up to 265 km/h. The 24-ton scale on which the vehicles are mounted is extremely sensitive and measures to the nearest gram. Even the supply lines of the cables must be laid in such a way that they do not introduce any disruptive forces into the system. The values measured with the help of the aerodynamic balance serve as the basis for determining the coefficients for air resistance force, lateral force, and lift force per axle as well as pitch, roll, and yaw moment.

The traversing system enables the engineers to position various aerodynamic probes or microphones around the measuring object with very high accuracy in order to be able to carry out pressure, acoustic, and speed measurements precisely. The system in the Sindelfingen wind tunnel has seven axes and can thus cover a measuring volume of 19 x 14 x 5 metres. The weight of this system is 26 tons, because even at maximum wind speed, the measuring probes must be held exactly and without vibrations in their position.

The centrepiece of the measuring section of the wind tunnel is the approximately 90-ton (198,416 lbs) five-belt system, which perfectly replicates road conditions. Thanks to the integrated turntable with a diameter of twelve metres, the vehicles to be measured can be rotated at any angle and, for example, crosswinds can be simulated realistically.

From 1943 to today: the “Large Wind Tunnel” in Untertürkheim

The “Large Wind Tunnel” of the then Daimler AG in the Stuttgart-Untertürkheim plant was the world's first to be specially designed to investigate the aerodynamic properties of motor vehicles. Construction work began in 1939, driven by the legendary aerodynamics pioneer Wunibald Kamm. The first documented measurement took place on 5 February 1943. Due to the war, it was not until 1954 that the wind tunnel was the first in the world to be used regularly for measurements on original-size cars.

Always brought up to the latest technical standards, the wind tunnel in Untertürkheim is still indispensable for Mercedes-Benz development, especially for contamination studies and windshield wiper tests. The aerodynamicists also still test there whether the camouflage of test vehicles is high-speed resistant. And the “Large Wind Tunnel” is not just called that: many commercial vehicles from Mercedes-Benz also get their fine-tuning there.

In addition to the aerodynamic work on vehicles, the wind tunnel is sometimes also used for non-automotive tests: Whether television is filming sequences here for a report on hurricanes, sleds are being optimised for bobsleighing or ice skaters are improving their posture - anyone who fights with or against the wind will find an ally in Untertürkheim. One of the very special challenges was the aerodynamic investigation of the revolutionary tent roof of the Munich Olympic Stadium.

From tropical to arctic: the weather in the climate wind tunnels

Mercedes-Benz also operates two climate wind tunnels in Sindelfingen that move weather events indoors. The climate wind tunnels allow engineers to optimise newly developed vehicles or components for all weather conditions at an early stage. For subsequent real-world testing on roads in arctic cold and scorching desert heat, only prototypes that have already proven a high degree of maturity under the most adverse climatic influences are now launched.

One of the two climate wind tunnels is designed as a cold channel with a temperature range of minus 40 to plus 40 degrees Celsius. In the warm channel, a temperature range of minus 10 to plus 60 degrees Celsius is available. Both channels have an integrated two-axle roller dynamometer and allow speeds of up to 265 km/h - enough reserves to put even sports cars on the test bench.

Modern measuring technology against wind noise and drafts

A special microphone array helps with noise measurement in the acoustic wind tunnel. The extensive measurements in the interior are also referred to as “acoustic holography”. Mercedes-Benz uses 64 double microphones (hand array) that can locate problem areas in the low-frequency range. Including the devices for the measurements outside, almost 500 microphones are used.

Flow measuring dummies, artificial heads and near-field microphones are used in aerodynamic and aeroacoustic development. “Tanja” is such a measuring dummy: Mercedes-Benz uses ‘her’ to analyse drafts in convertibles and roadsters. More than a dozen sensors on the head, neck and arms measure the flow velocities of the airstream in the interior. “Tanja” takes care of every seat. On the front seats, ‘she’ acts as a 75 percent man, in the back as a 50 percent man. At the front, the test dummy is placed so that it is larger than 75 percent of all men. At the rear, the seating position corresponds to that of an average man.

From a teardrop car to the VISION EQXX

Aerodynamics at Mercedes-Benz: history

- Inspired by aircraft construction: early aerodynamic optimisations of cars
- Records in series production: ancestry to the CLA with EQ Technology
- Aero-Champions: concept vehicles and technology platforms such as the VISION EQXX

More than 100 years ago, aerodynamics first came into the focus of science - but it was not until after the second oil crisis about 45 years ago that it was given high priority in vehicle development. The first passenger cars were derived from the carriage. Also because of the low possible speeds, aerodynamic considerations played no major role. Even the first “real” cars of the Mercedes brand from 1901 struggled against the headwind in a jagged manner. For example, the Mercedes Simplex from 1902 had a frontal area of around 3 m², and its C_d value of 1.05 meant that the wind encountered almost ten times as much resistance as in a modern passenger car.

Shortly after the First World War, the experts began to deal with the aerodynamics of automobiles. Aircraft designer Eduard Rumpler (1872-1940) presented his teardrop car in 1921, which with its narrow body not only addressed the question of the frontal area (2.4 m²), but with its teardrop shape minimised the turbulence at the front and in the wake. The result looked unusual, but with a C_d value of 0.28 and an air resistance of 0.67 m², it set a clear signal.

Paul Jaray (1889-1974), the other “father of streamlining”, also came from the aviation industry. Also in 1921, he applied for a patent that still reads like instructions for building a modern car body: “The lower part of the body has the shape of a half-streamlined body and covers the chassis with the wheels, the engine compartment and the passenger compartment. The underside is flat and runs parallel to the floor surface.” For the first time, the wheels were no longer free, but were integrated into the body, and the fastback minimised turbulence at the rear. Because conventional drive technology fit under Jaray's body shape, some car manufacturers built vehicles according to his principle, including Mercedes-Benz: in 1935, a correspondingly shaped prototype was created.

The biggest disadvantage of Jaray's streamline was the long trailing rear - a “dead” space. The solution was found in the 1930s by Wunibald Kamm (1893-1966), the first professor of automotive engineering at the Technical University of Stuttgart and in 1930 founder of the private and non-profit Research Institute for Automotive Engineering and Vehicle Engines Stuttgart (FKFS). Kamm sharply cut off the streamlined rear and developed the prototype of an aerodynamically innovative passenger car with the K-Wagen from 1938 to 1941. The term “Kamm-back” for the sharp trailing edge is still a term today. The K3 car was based on a Mercedes-Benz 170 V and, with a frontal area of 2.1 m², was characterised by a C_d value of 0.23, which was measured in the model wind tunnel at the time.

Increasing prosperity and falling gasoline prices in the 1950s pushed the effort to reduce driving resistance into the background. It was not until the second oil crisis in 1980 that attention was turned back to minimizing consumption and air resistance. The production cars from Mercedes-Benz therefore repeatedly set standards in terms of aerodynamics: Examples of this are the S-Class of the 126 series presented in 1979 with a C_d value of 0.36, the sedans of the E-Class 124 series introduced in 1984 with C_d 0.29, or the S-Class sedan (W 220) presented in 1998 with a C_d value of 0.27. With a C_d value of 0.22 and a frontal area of 2.19 m², the CLA (W 117) achieved the lowest air resistance of all production vehicles worldwide in 2013 (ditto the A-Class sedan in 2018 and the S-Class (223 series) in 2020). Most recently, the EQS reached for this title in 2021. With a C_d value from 0.20, the electric sedan is the most aerodynamic production car in the world.

Ahead of their time: record cars, streamlined cars, and concept vehicles
Aerodynamically-perfected racing and record cars also have a long tradition at Mercedes-Benz. The Mercedes-Benz W 25 record car of the 1936 season has a chassis with a full streamlined body for the first time. In the wind tunnel of the Friedrichshafen Zeppelin Works, the experts analyse and optimised the body in terms of flow technology. The result: a C_d value of 0.24, a speed world record, and three international class records. Rudolf Caracciola achieves a top speed of 372.1 km/h with the 419 kW (570 hp) record car.

The follow-up project, the Mercedes-Benz W 125 record car, set the speed world record on public roads that is still valid today on January 28, 1938: Rudolf Caracciola reached a speed of 432.7 km/h. The record version of the Silver Arrow W 125 is perfectly prepared for its special purpose in the wind tunnel of the German Research Institute for Aviation in Berlin-Adlershof. The flat, fully clad body with a wedge-shaped rear reaches a sensational C_d value of 0.16. This also includes a radically reduced air intake at the front.

However, the aerodynamic findings are not only implemented for record-breaking journeys, but also on the road. The Mercedes-Benz 540 K Streamliner built in 1938 crowns the development of aerodynamically optimised Mercedes-Benz vehicles in the 1930s. With the flowing lines and low silhouette of its aluminium body, the minimised sources of interference on the surface, and the clad underbody, the Streamliner exemplifies the findings of research - it has a remarkably low drag coefficient of C_d 0.36.

The streamline of the Silver Arrows came back into the focus of the world public in 1954 with the completely newly developed W 196 R racing car. The aerodynamically optimised streamline version was built first for the 1954 season because the opening race in Reims/France allowed very high speeds. A second variant with free-standing wheels followed shortly thereafter. The racing comeback of Mercedes-Benz ended spectacularly: Juan Manuel Fangio and Karl Kling achieved a double victory. With the improved version of the Streamliner, Fangio also won the 1955 Italian Grand Prix.

From 1969, Mercedes-Benz built a series of experimental and record vehicles with the internal designation C 111. The C 111-III diesel record car from 1978 was consistently aerodynamically optimised. The vehicle is narrower than its predecessors, has more wheelbase, full fairing of the wheels, and a long trailing rear. In this way, the C_d value of the C 111 was reduced to 0.18. During record runs in Nardò, the Streamliner reached speeds of over 300 km/h. The nine world records of the C 111-III also include the one over 1,000 miles (1,609 km) with an average speed of 319 km/h.

Strictly speaking, the Concept IAA (2015) embodies two cars in one: a four-door coupé with a fascinating design on the one hand and an aerodynamics world record holder with a C_d value of 0.19 on the other. In addition, from 80 km/h, the study automatically switches from design mode to aerodynamics mode and changes its shape through numerous active aerodynamics measures: eight segments extend from the rear and lengthen it; extendable front flaps in the front bumper improve the flow around the bow and the front wheel arches; the active rims change their concavity; and the fin in the front bumper moves backwards, optimising the flow on the underbody.

With a C_d value of 0,17[2] the VISION EQXX (2022) offers the wind even less air resistance than an American Football. The technology platform owes its outstanding C_d value to the streamlined basic shape, the innovative, aerodynamically neutral cooling plate in the underbody, and the elaborate integration of passive and active aero elements into the body.

As part of the CONCEPT AMG GT XX technology program, research was conducted into a fundamentally new technology: “Aerodynamics by wire”. For the first time, the research team was able to use an electric plasma actuator to create a targeted flow separation on a body curve at the rear. Normally, this requires a physical,

[2] C_d value determined in the Daimler aeroacoustic wind tunnel at 140 km/h wind speed

geometric spoiler lip on the outside of the vehicle. This highly innovative solution reduces air resistance, improves aero performance, and enables completely new design freedom.

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