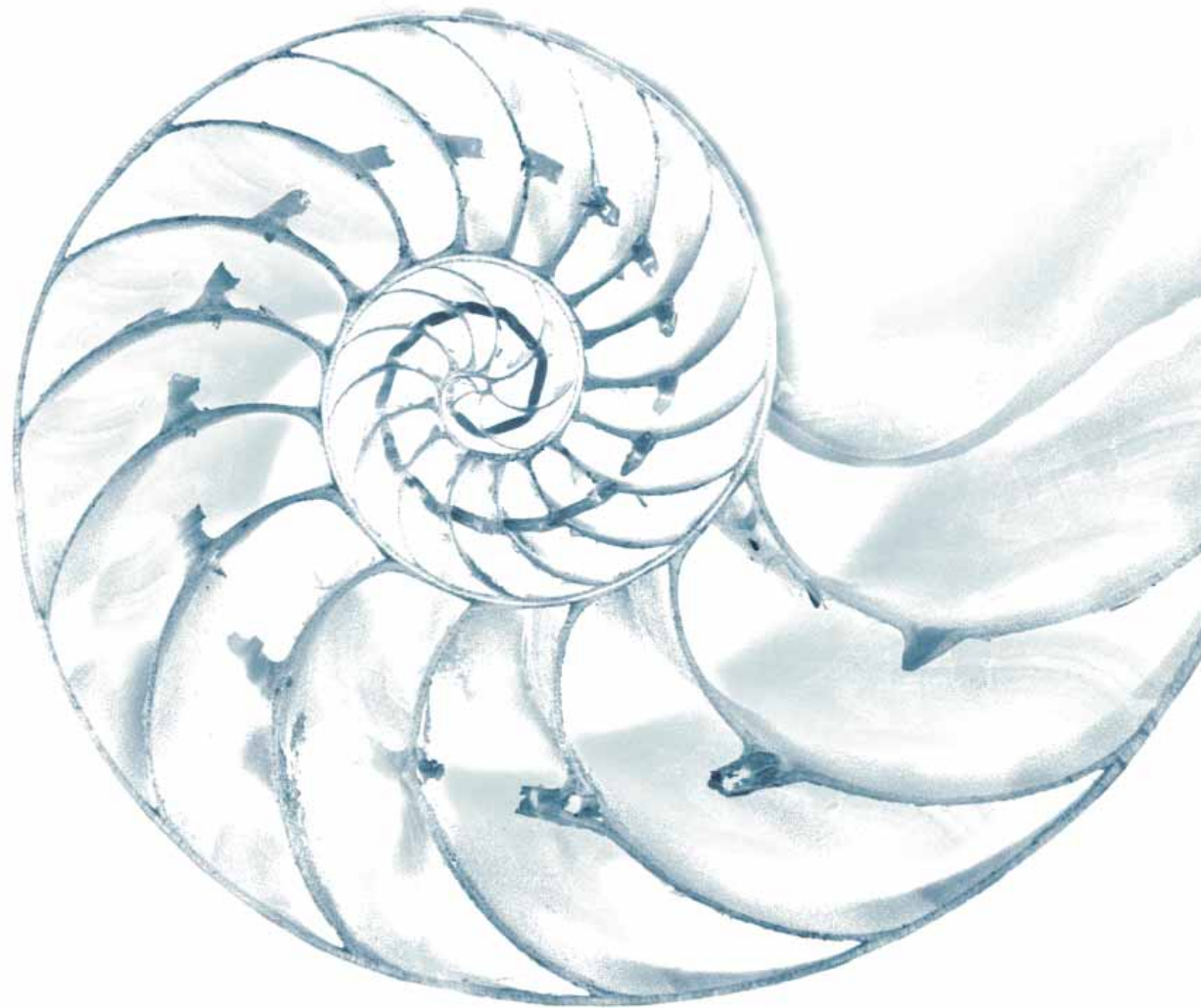


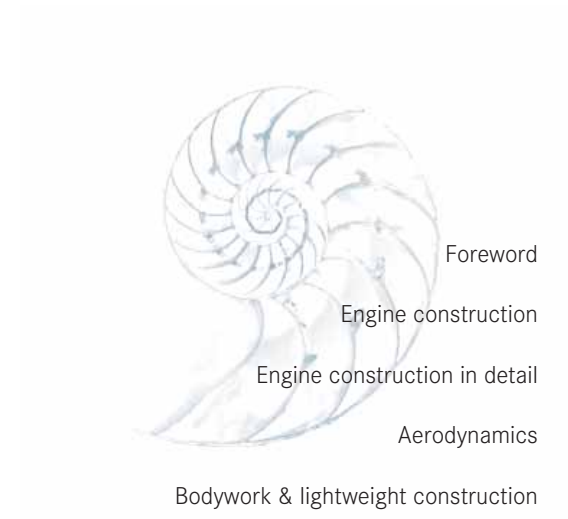


Our nature.

Performance and responsibility.



Mercedes-Benz



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How do we achieve maximum performance?
By assuming responsibility.

The history of Mercedes-AMG is full of records – whether they be for motor racing, performance or sales figures. And every day we resolve to give our best. But a success story can only be written if you have a firm eye on the future. As a high-performance brand and part of a globally active group of companies, it is our duty to develop sustainable technologies. In short, to assume responsibility. After all, even

if we are only responsible for a tiny proportion of global CO₂ emissions, each saved gram is crucial. We are all aware of this responsibility and are more than happy to assume it. After all, we all have motor racing in our blood and, therefore, simply relish a challenge.

What do we get from increasingly higher power outputs?



Friedrich Eichler,
Director Powertrain

Increasingly lower emissions.



In a crystal, none of the molecules or atoms are arranged by chance. In an AMG engine, the same goes for every last screw. There is just one aim behind every detail, every material and every production method: to get the absolute best from our engines. But, for us, the best doesn't just mean maximum output. We believe it is overall performance that counts. And that includes low fuel consumption and fewer emissions for a healthy environment. How do we achieve this? By ensuring preci-

sion, for example, by using the highest-quality materials and by minimising weight. But, above all, it is thanks to the experience of our workforce. In keeping with our "One man - One engine" philosophy, every single powerplant is produced by hand. The AMG Master Mechanic responsible signs the engine by adding his signature to the engine plate, doing his bit to safeguard the future of our company. And this can only be assured if we think sustainably every time we create the heart of an AMG Mercedes.



Engine construction in detail.

Our first engine was a racing engine. Back in 1971, the 300 SEL 6.8 AMG was first in class and second overall in the 24-hour race at Spa-Francorchamps.

A sensation at the time. What we essentially achieved back then is what we still do best today: making the most sophisticated and efficient cars even more efficient. To do this, we develop engines whose components are configured for maximum efficiency, right down to the last detail. Engines which send their power to the road with minimum friction loss. It is the ability to increase output whilst reducing fuel consumption that gives us our competitive edge. A cutting edge that we definitely know how to use. Responsible handling of energy comes naturally to us. Our roots lie in motor racing – where efficiency is the key to our success. Engines were invented to

The AMG fast-running concept – the best of both worlds.

provide forwards thrust. The more you provide, the better you are. This virtue still applies at Mercedes-AMG to this day as we combine performance with responsibility. We have to conduct intensive research to produce every horsepower generated by our engines. It is this process that enables us to keep

on coming up with solutions that make our cars more efficient and benefit the environment in other ways. Not least because many of our patents have been adapted and incorporated into other manufacturers' series production.

In years to come, the **TWAS (twin-wire-arc spraying) coating** used for the cylinder wall in our AMG 6.3-litre V8

AMG accepts the challenge – and takes responsibility for the environment very seriously.

engine is sure to be yet another development adopted by the industry as a whole. This world premiere – the coating is being used for the first time in a series-production car – is testament to the absolute quality of our products. And to their sustainability. Our ecofriendly procedure dispenses with water-contaminating galvanic processes. It reduces wear to a bare minimum, which preserves material and resources. And it means that, even after many miles, an AMG engine still runs just as it did on the very first day.

To enhance the level of excitement generated by our engines yet further, our engineers work continuously to reduce fuel consumption and harmful

emissions. Mercedes-AMG is already the leader in this segment. But this is not enough for us. By 2012, we will reduce the fuel consumption of our fleet by a further 30 percent and set a new benchmark for high-performance vehicles. One of these is undoubtedly the E 63 AMG – the sportiest E-Class of all time. It consumes 1.7 litres per 100 km less fuel than its predecessor on average –

even though its output has been increased by 11 hp. What's more, we have reduced the CO₂ emissions by around 18 percent. This immense increase in efficiency is only possible if the most effective drive unit is used: the **AMG 6.3-litre V8** – the first engine to be developed single-handedly by AMG. This powerplant was developed in Affalterbach, from the first bolt to the last, and hand-assembled by our engineers. With a total weight of just 276 kg for the engine and transmission, it is the lightest V8 powertrain in its class. And lower weight means lower fuel consumption. By way of example, we have removed the predecessor model's supercharger, which was deemed to be too heavy, replacing it with a large-displacement,

naturally aspirated powerplant – based on the Mercedes-AMG fast-running concept. It combines the best of both worlds: more output, more torque and more refinement yet lower fuel consumption and lower emissions. The result is the world's most powerful V8 naturally aspirated engine. Its high basic torque offers effortlessly superior driveability and agile response at low revs. All

of which makes for exceptional fuel economy. Aply assisted by the newly developed **"C" mode for the AMG DRIVE UNIT** in the new E 63 AMG. "C" stands for "Controlled Efficiency" and means that the shifting points and engine characteristics have been configured to optimise efficiency and minimise fuel consumption. The engine uses its immense torque rather than high revs, while the transmission shifts earlier and the engine runs at low speed – hence consuming less fuel. Another aspect which helps to reduce fuel consumption is the new, extremely compactly designed combustion chamber, which benefits from optimum filling thanks to a diecast magnesium intake system, including flow-optimised intake ducts

produced using state-of-the-art simulation methods. Consequently, combustion is practically free of untreated emissions. The new, extremely wear- and abrasion-resistant cylinder liner in the crankcase reduces oil consumption throughout the engine's entire service life.

In other words, a large number of small measures combine to enable us to get closer to our ultimate aim of developing the zero-emission car. One part of this is AMG's **active alternator management**. Rather than charging the vehicle battery

A new benchmark for high-performance cars.

permanently, this system only does so when the charge level falls below a critical point. The alternator is only activated when it is actually needed, using the braking energy when the vehicle is decelerating, which means that, for much of the time, the engine has one less device to supply and runs with lower resistance. All of which helps to save fuel.

To enhance quality even further, we use **forged connecting rods** made from highly durable material. New design solutions reduce the weight of the connec-

ting rods, allowing a high combustion pressure, which improves performance. The extremely light pistons minimise the oscillating masses, enhancing refinement and reducing fuel consumption.

All of these measures show that we take our **environmental responsibility** extremely seriously. The increase in output and optimisation of fuel consumption go hand in hand. For all the benchmarks that we have set during the course of our history, there is one limit that we would never exceed, however: each and every AMG Mercedes engine undercuts

Efficient top performance.

AMG is known for top performance all over the world. A look at what the future holds shows just how much we think about the environment.

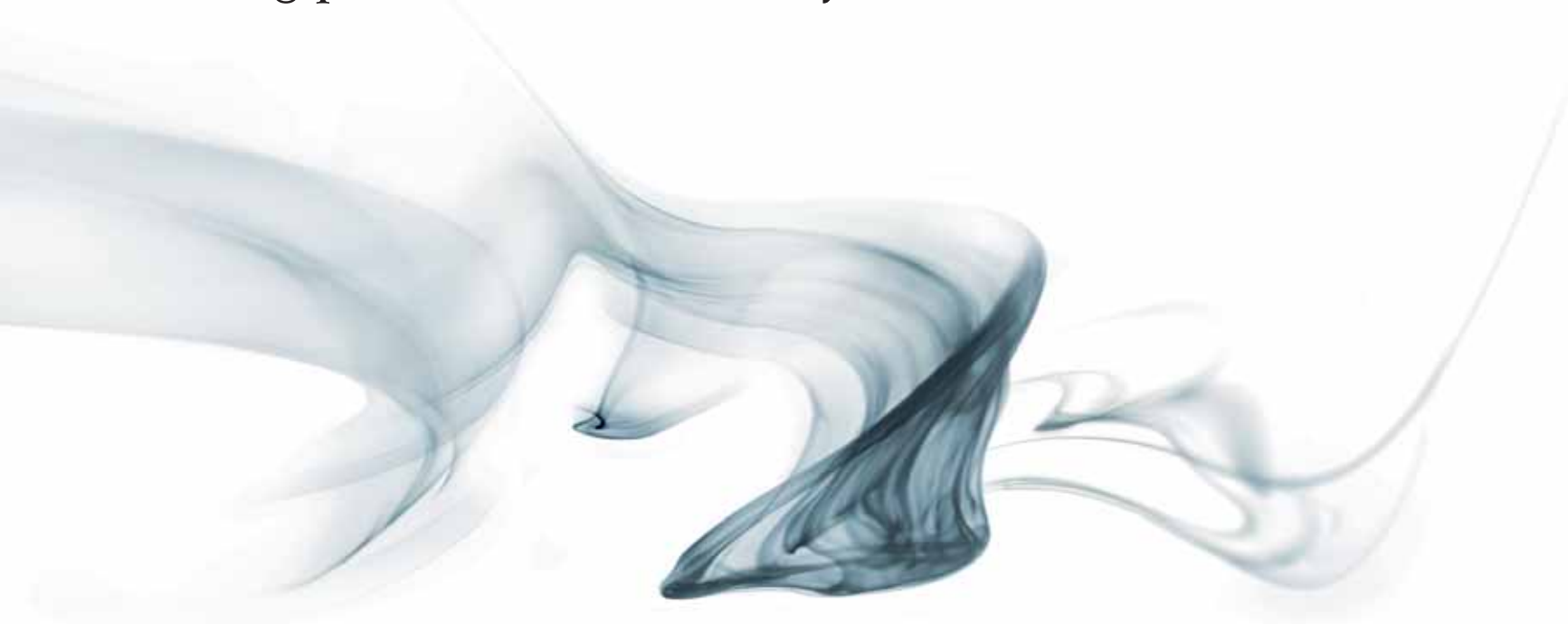
From 2010, all Mercedes-AMG vehicles will be equipped with **a start/stop function**. This system switches off the engine when the car comes to a stop, preserving resources and reducing CO₂ emissions.

In the same year, we will be introducing second-generation **direct petrol injection** featuring piezo technology. Highly precise injectors ensure improved fuel economy and almost complete combustion, meaning fewer emissions.

In 2011, we will be unveiling **cylinder shut-off**. Individual cylinders shut off automatically at low engine loads. They are reactivated when needed, based on the "eight for pleasure, four for economy" motto. This technology offers immense potential for saving energy, not least in the case of the most powerful engines.

It is our declared objective to reduce fuel consumption by 30 percent before 2012. We are constantly developing new ideas to make our engines even more economical. And many of these will be ready for market shortly.

Where do I find the common denominator
of driving pleasure and economy?



In the wind tunnel.

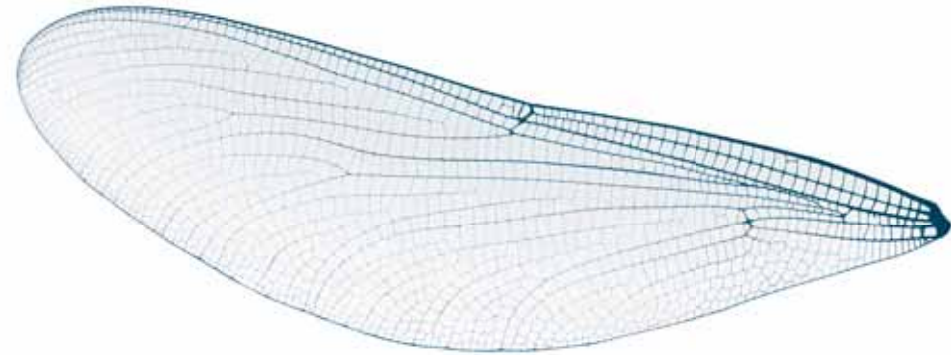


In an AMG Mercedes, airflow can make all the difference when it comes to speed. This is why we work together with the air. We study its flows, utilise its strengths and oppose it as little as possible. We show the air respect by producing a breathtaking design – with visible lines but invisible airflow. Because the visual aspects of an AMG that send people into such raptures are just part of the work our designers perform. They go much further than

this: air cools the engine and the brakes as well as helping to increase the contact pressure and reduce fuel consumption. But air can also slow a car down, which is why AMG optimises the chassis, lowering it to minimise wind resistance and air swirl. All of which means that the design of an AMG Mercedes has one purpose above all: to display muscle without wasting energy.

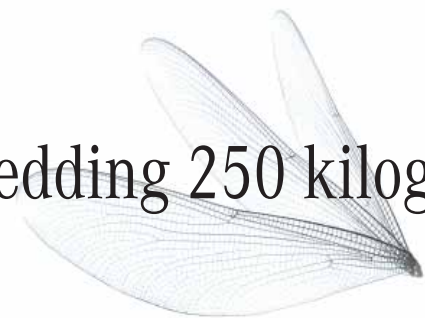


How can I assume more responsibility?



Tobias Moers,
Director Vehicle Development

By shedding 250 kilograms.



The secret of insect wings lies in their intelligent design. Some parts are very thin, while others have a large cross-sectional area but are hollow inside. Features which apply to almost every component in a vehicle and to the entire body. But what makes the perfect component? Its shape, its stiffness – and therefore its stability – or its weight? The answer: all of these. This is why we think of every detail, no matter how small, when developing components and the car body. When selecting materials, we always look at their weight and their specific properties in order to achieve the desired stiffness using as little material as possible. When shaping

them, we think about how form can be combined with load-oriented design rather than what looks best. Our main motto is therefore maximum function fulfilment with minimum material use. The logical consequence of this approach is reduced fuel consumption and enhanced dynamics with lower weight, a perfect case in point being the SL 65 AMG Black Series, which has shed 250 kilograms despite its increased output. To achieve this, we weighed literally every component of the SL 65 AMG Black Series. As a result of our efforts, it achieves exemplary efficiency for its class. So even the smallest aluminium screw can do its bit for the environment.



Aerodynamics, bodywork & lightweight construction in detail.

A quick glance at the front or rear apron reveals all. Mercedes-AMG was born on the racetrack. Others may praise the sheer elegance of our cars. But the wind resistance is actually measurable. This is why we leave nothing to chance when it comes to the looks of an AMG Mercedes. Every spoiler that adorns an AMG has a purpose, every design tweak a specific function. And the aim of each individual measure is to use the headwind to produce even more forward thrust. We learned how to do this through our involvement in motor racing.

We not only fight against the wind – we also harness it.

This is what allows our cars to become ever more economical. A car body's wind resistance increases by the square of the car's speed. At a speed of 120 km/h, it accounts for around half of all air drag and rolling resistance. In other words, those looking to reduce fuel consumption must not provide the wind with an easy target.

Millimetres matter when it comes to design as well as on the racetrack. The sheer artistry of our engineers lies in achieving maximum effect with minimum change. As an example, we have lowered the new chassis for the SL 65 AMG Black Series substantially to reduce the target area for wind resistance. With the help

of side ventilation for the wheel arches, tested in the wind tunnel, we reduce the pressure that also builds up in the wheel arch due to the turning wheel. As a consequence, we were able to reduce front-axle lift and make a positive contribution towards improving overall aerodynamics and reducing wind resistance. But wind resistance is not always a negative fac-

A few millimetres can make all the difference to the design.

tor. It also has a positive side. By way of explanation, we specifically target the aerodynamic forces by extending the newly developed rear wings of the SL 65 AMG Black Series at 120 km/h, reducing the rear-axle lift to almost zero and increasing the effective wheel load on the rear axle by a substantial margin. This increased wheel load reduces slip and spinning of the rear wheels when the car is accelerating yet also makes for enhanced directional stability, road adhesion and handling safety.

Not only does the special AMG wheel design look stylish, it also optimises ventilation of the wheel arches, ensuring optimum brake cooling without disturbing the air flowing around the side of the car's body.

AMG models do not just fight against wind resistance; they also make effective use of the airflow and its forces to enhance handling dynamics and efficiency. Improving the coefficient of drag has always been and will always be a continuous process. If you want to be the best, you have to **develop the best possible solution** for every detail. We follow this

maxim consistently – and this approach pays off with a highly impressive overall result: high-performance vehicles offering sheer, unbridled power. Power which is used intelligently. In terms of efficiency, an AMG Mercedes is vastly superior to a conventional car. Even if it doesn't look that way at first glance.

Top athletes cannot afford to carry a single gram of excess fat. And the same applies to high-performance cars made by Mercedes-AMG. Their low weight makes them fast, dynamic and efficient. And, in relation to their output, extremely economical.

As a company that produces thoroughbred sports cars, we have always honed our entire fleet to ensure ideal weight –

with great success. And there are many factors behind this, a consistently lightweight construction being just one of them. We don't dodge solving the trade-off between strength and lightweight construction. We keep on developing and testing until we have found the optimum solution for maximising aspects such as stiffness and stability whilst minimising the use of the desired materials. For instance, the bodies of Mercedes-Benz cars have long been made using special sheet steel panels with graduated thickness. These are manufactured with unerring precision, so that the material thickness varies from section to section, corresponding to the actual loads and stresses exerted on those specific sections of the car. We use aluminum as the body material wherever we can. The bonnet and the wings of the new E 63 AMG, for example, are made entirely of this **lightweight material**. Intelligent lightweight construction has also been a maxim for brake development at AMG for many years. All of the brake callipers used at AMG are fixed callipers made from aluminum – regarded as the lightest material available for brake callipers throughout the automotive industry. Finally, this commitment to lightweight construction is also reflected in the brake discs which, in the case of AMG, almost always feature a composite design. As an example of load-oriented lightweight construction, a cast-iron friction ring is fastened to an aluminum bowl by several special

screw connections. The braking work is performed by the friction ring, while the link to the wheel hub is provided by the aluminum bowl. This technology allows us to reduce the weight of a brake disc by around 20 percent compared to a fully cast brake disc. Masses present ahead of the front axle are a major factor in determining a car's

We employ intelligent technology to save on steel.

agility. Each reduction in these masses reduces the mass inertia at the front of the car and enhances agility. We have taken on this task by developing a new radiator module – combining higher cooling output with lower wind resistance and a weight-optimised design – for all new models, including the E 63 AMG. Displaying the attention to detail that you have come to expect from us. The

Our desk drawers are full of ideas.

result is noticeably more agile all-round vehicle response. The most radically "reduced" of the top athletes from the AMG stable is the SL 65 AMG Black Series. Its outstanding

power-to-weight ratio of **2.79 kg per hp** is on a par with that of a super sports car. This is only possible thanks to the generous use of our favourite material for shedding excess weight: carbon fibre. Both inside and outside, including for the front apron, the bonnet, the front wings and the boot lid. What's more, the SL 65 AMG Black Series dispenses

with the usual vario-roof and roof hydraulics, which lowers the centre of gravity as well as reducing weight. Instead, the top of the car is spanned by a carbon-fibre roof panel with an integral roll-over bar. For the benefit of power output and the environment, but never at the expense of safety.

Looking forward to the future.

We will continue to consolidate our competence in the field of lightweight construction; the drawers of our developers' desks are crammed with ideas just waiting to be turned into reality.

The next model series will incorporate even more carbon fibre, plastics, magnesium and aluminum, for example. Our research into **alternative materials** is state-of-the-art. When it comes to assemblies such as the roof and wings, we aim to achieve further weight benefits by using exclusive AMG parts.

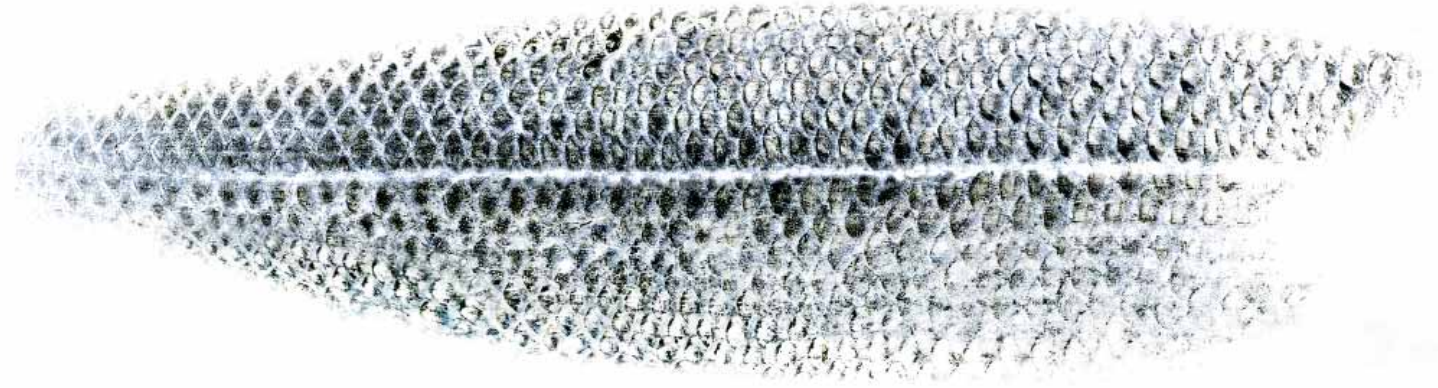
Likewise, the **ancillary components** in the engine compartment reflect our commitment to lightweight construction and the development of concepts for weight-optimised cooling and electrical systems.

The ultra-light **ceramic brake** is coming. In future, all AMG driveshafts will be replaced by hollow shafts to save weight and, therefore, fuel as less mass will need to be moved.

We are already starting to use more forged wheels and wheels produced using the **flow-forming process**. These are lighter, reduce the moved masses and optimise turn-in ability when cornering.

Even hoses, lines and brackets have been analysed and optimised with respect to weight and material usage. And if you think about how many screws and bolts are needed when producing an AMG Mercedes you will see the wisdom behind the idea of replacing these with lightweight aluminum screws and bolts. After all, every gram matters when you're a high-performance athlete.

How can a tyre protect nature?



By incorporating the right chemistry.

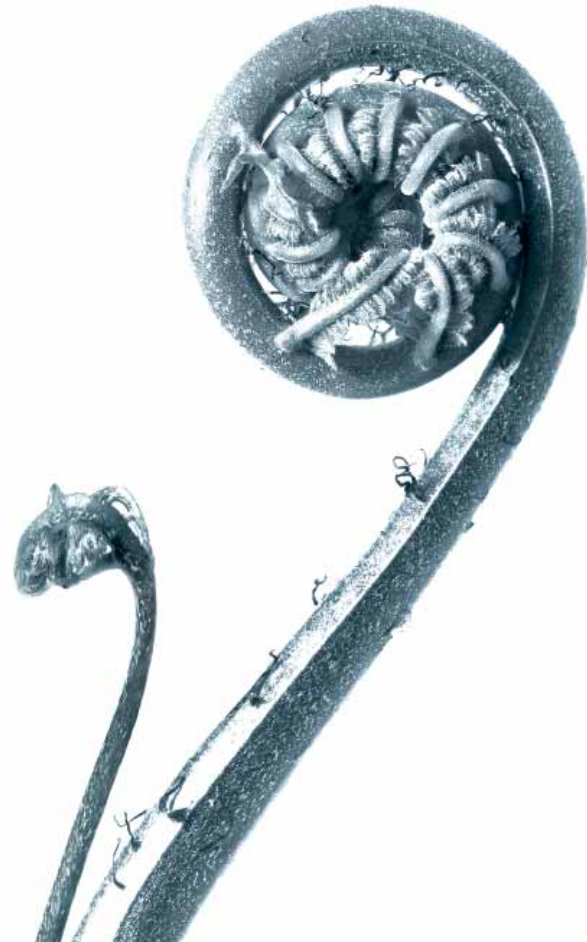


A fish's skin structure determines its low flow resistance. Similarly, the composition of the tyres determines their low rolling resistance. Since they can improve a vehicle's fuel economy by a decisive margin, the tyres are a further focus of our development work. Rolling resistance is caused above all by the tyre's deformation when it makes contact with the road. And this is where the chemistry comes into play: working together with renowned tyre manufacturers, we have developed tyres whose material composition and rubber compound reduce internal friction losses

and, therefore, cut rolling resistance by up to 17 percent. A major step when you think that, at speeds of up to 70 km/h, rolling resistance has a greater impact on fuel consumption than wind resistance. Likewise, the consistent use of lightweight wheels is a factor not to be underestimated. Their lower weight also helps to reduce fuel consumption – a further example of how visual highlights can play an important part in preserving our resources.



How long does an AMG Mercedes live for?



Wolf Zimmermann,
Chief Engineer Technology Strategy

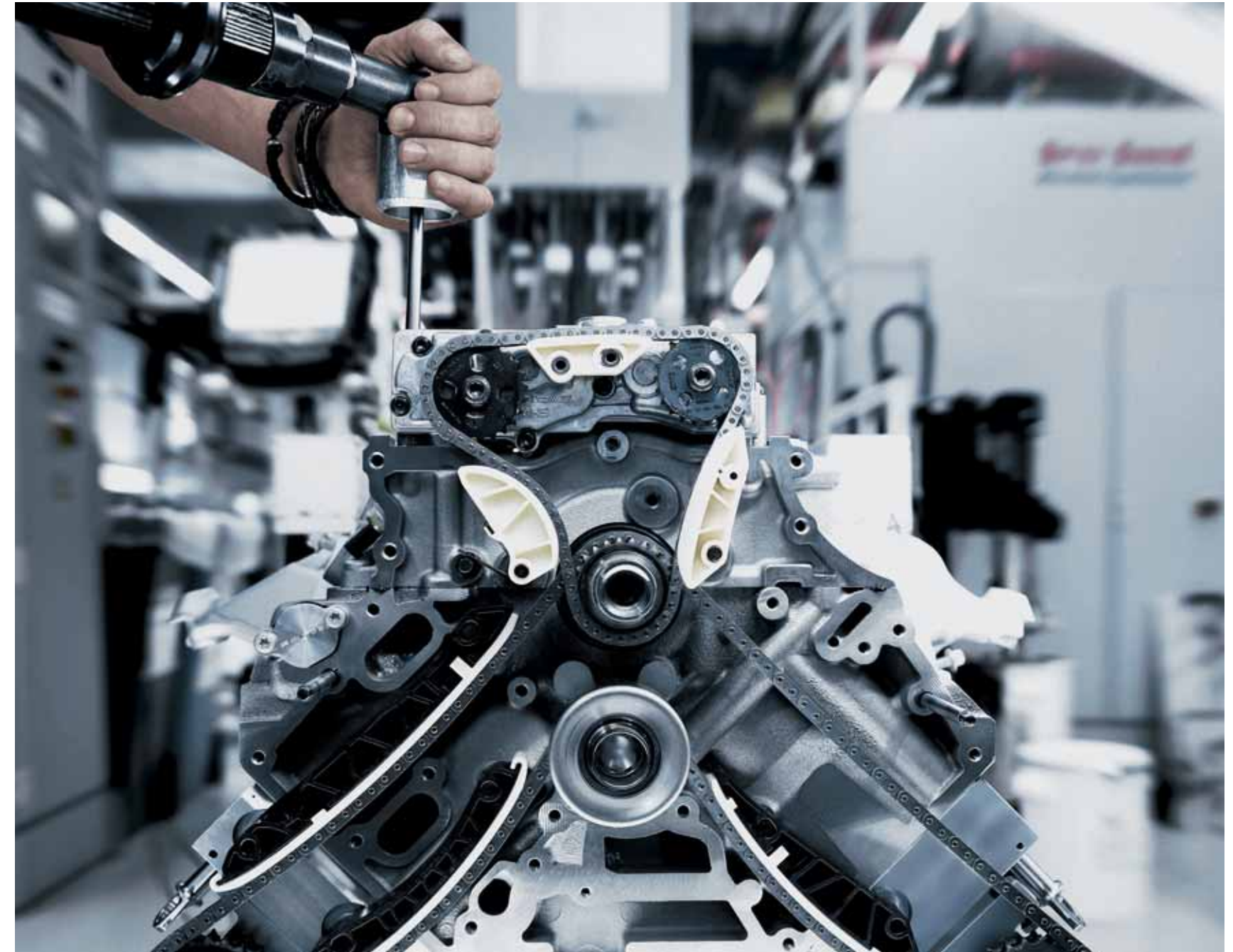


95 % of it lives forever.



A sophisticated reproduction process has allowed ferns to survive for more than 400 million years. Thanks to intelligent use of materials, an AMG Mercedes can also live practically for ever – its constituent parts reappearing in various different forms throughout their long life. After all, our vehicles are already 95 percent recyclable, even though this will not become a European Union requirement until the year 2015. We achieve this mainly by using high-quality, recycled automotive plastics. However, using renewable raw materials such as cotton, hemp and other natural fibres likewise helps to reduce the consumption of traditional energy re-

sources such as coal, natural gas and crude oil. It goes without saying that we do not use heavy metals such as mercury, cadmium or lead to build AMG Mercedes cars. So our responsibility stretches beyond the lifetime of the car. There is one key aspect of recycling we cannot influence, however, namely the timing. This is down to our customers, who will continue driving their AMG models for years to come. This means that, for most AMG vehicles, recycling will not be an issue for quite some time, not least thanks to their exceptional quality.



What is our most important resource?



Our workforce.



Each fingerprint is unique, just as each of our employees is unique. Each has their own strengths, experience and ideas. And it is precisely these differences that make Mercedes-AMG such a unique company. Not only technologically but, above all, on a human level. Getting on well together reminds us of the spirit of our formative years following the formation of the AMG company by Hans Werner Aufrecht and Erhard Melcher. It makes us proud because, as well as investing in the development

of technologies, we also invest in the development of our employees. And this is no mean feat when you consider that our workforce has doubled in size within the last four years alone. We are pleased to welcome on board everyone who shares our passion for special cars. And we are always on the lookout for people who can work together with us to master the challenges of the future.



What's our most important promise made of?



Three letters.



Water is bursting with energy. The same is true for the people who give their all every day for the AMG brand. With passion and precision, our employees develop and produce automotive masterpieces with superior performance. Our high-performance engines – based on the Mercedes AMG principle of “One man – One engine” – are meticulously handcrafted with highly technical expertise.

At our AMG Performance Studio in Affalterbach, your individual wishes are masterfully transformed into reality. In 15 countries and 175 AMG Performance Centres, AMG experts all over the world look after you and your automotive dreams. Because facing the future responsibly also includes building lasting customer relationships. Performance and responsibility are the cornerstones of our brand’s promise. It’s a promise you can trust.





Where are we going in the future?
Back to where it all started.

Affalterbach is everywhere. That's because the one place where an AMG Mercedes really feels at home is on the road. Wherever that may be in the world. But its actual home is not far from Stuttgart, in the heart of rural Swabia, in tranquil Affalterbach. Unusual for a high-performance brand? We can't think of any better location. When we drive to work in the morning, we pass by apple trees and fields in full bloom. Then we see people who still make their living with and in nature. And we are likewise accountable to them. This is why we have continued to modernise our site – from

the introduction of a consistently applied energy-saving management system to a certified ecomanagement system and measuring systems for optimised energy consumption. With measures ranging from energy-saving bulbs to photovoltaic systems and beyond – measures which safeguard our future and also serve as a model when we come to construct our cars. So that you too can say "Affalterbach is everywhere" when out on the road, wherever you are in the world.



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