Der Golf.
THE DRIVE
Das Auto.

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Golf

10/2012 Golf

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Volkswagen

The new Golf. Das Auto.

International Driving Presentation

Porto Cervo, October 2012

Notes:

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Features and technical data apply to models offered in Germany. They may differ in other countries. All fuel consumption and CO_2 emissions data cited in this press kit refer to official vehicle registration values (combined values), which were determined under standard conditions in the NEDC cycle. Fuel consumption and CO_2 emissions values for the Golf 1.4 TSI with ACT (103 kW / 140 PS) and the Golf BlueMotion 1.6 TDI (81 kW / 110 PS) are forecast values as of September 2012.

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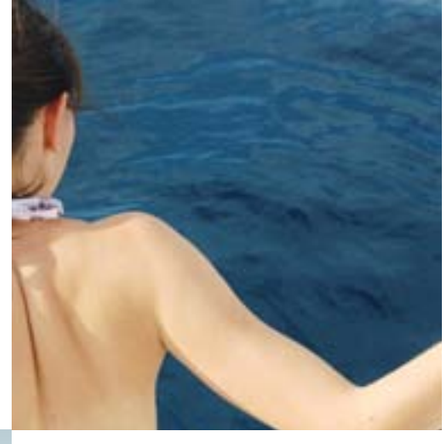

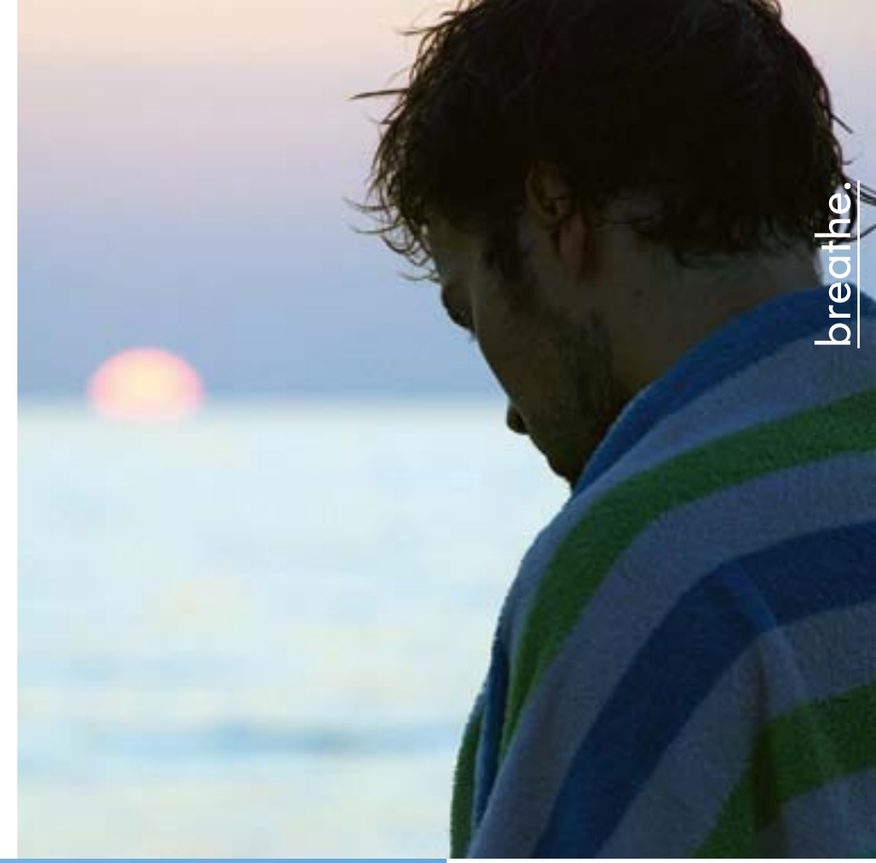
breathe.


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WOB GO 507

The key to

perfection.

New Golf integrates premium class assistance systems in the A-segment

Golf BlueMotion sets new standards for sustainability – 3.2 l/100 km and 85 g/km CO_2

New Golf is up to 100 kg lighter and 23 per cent more fuel efficient (140-PS TSI)

Wolfsburg/Porto Cervo, October 2012. On 4 September, Volkswagen celebrated the world premiere of the new Golf in Berlin. Just one day later, advance sales of the car – a best-seller with over 29 million units sold – began in initial launch countries. Just three weeks later, Volkswagen presented the Golf for the first time to a large audience at the Paris Motor Show. And the first Golf cars will arrive at dealers on 10 November (launch in Germany). The seventh generation of this Volkswagen delivers the best Golf ever: its weight was reduced by up to 100 kg, thereby reversing the often cited upward weight spiral. Fuel economy was improved by a maximum of 23 per cent, depending on engine selection. The future Golf BlueMotion – advance sales begin later this year – will have a low fuel consumption of 3.2 l/100 km as measured under standard NEDC conditions (equates to 85 g/km CO_2). In addition, Volkswagen is equipping the Golf with an entire armada of new assistance systems on the market – some as options and others as standard.

Affordable – new Golf can do everything better and does not cost more

3.8 l/100 km. The base petrol model (TSI) consumes 4.9 l/100 km and the entry-level diesel (TDI) 3.8 l/100 km. The TSI models thus beat the CO_2 mark of 115 g/km, while at 99 g/km of CO_2 the TDIs come in under the 100 g/km threshold. As mentioned, the best figures are delivered by the Golf BlueMotion: 3.2 litres per 100 km and 85 g/km of CO_2. Another new engine is the 1.4 TSI with 103 kW / 140 PS and automatic cylinder shut-off (ACT: active cylinder management). The combined fuel consumption of this petrol engine that is as sporty as it is sustainable: 4.7 l/100 km (equating to 109 g/km CO_2).

Prof. Prof. Dr. Winterkorn: “This sense of responsibility for building sustainable cars in large numbers is something that we have always been committed to at Volkswagen. It was therefore important to us to build the most fuel-efficient Golf ever, while keeping it affordable. And we’ve succeeded in doing that. The Golf Mk7 is extremely fuel efficient,


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equipped as standard with the Stop/Start system and battery regeneration mode and yet – to take Germany as an example – at a base price of € 16,975 it does not cost a cent more than the previous entry-level model."

Europe – up to 119,000 metric tons less CO_2 per year

13.9 per cent less CO_2 on average. Dr. Ulrich Hackenberg, Member of the Board of Management Technical Development, Volkswagen Brand, adds this on the subject of sustainability: "We estimate that by virtue of the new Golf fleet – with CO_2 emissions reduced by 13.9 per cent on average across the entire engine range – 119,000 tons less CO_2 will be produced annually in Europe alone."

Progressive – first Volkswagen with multicollision brake

Safety and comfort at a new level. The hunt for every last gram, meanwhile, must not be allowed to lead to advances being achieved at the expense of steps backwards in other areas. Here too, Volkswagen demonstrates that the Golf stands more than ever for a democratisation of progress and for perfection in every detail: with added space (extra legroom in the back and 30 litres more boot capacity); new pioneering safety systems such as the multicollision brake system and a proactive passenger protection system, as well as adaptive cruise control (ACC) with Front Assist including the city emergency braking function; a new progressive steering system and wheel suspension; a driving profile selector, a touchscreen as standard in all models and a completely redesigned world of information and entertainment systems with a display in the top versions that reacts to hand movements via a proximity sensor.

CO_2

- 119,000 t

Confident – one of the best-known designs is further enhanced

Unmistakable product features. The now seven generations of the Golf have written a story of success not only in technical and economic achievement, but also in industrial design. The Golf's exterior form is today one of the most familiar product designs in the world. Walter de Silva, Head of Design, Volkswagen AG: "One of the keys to the Golf's success lies in its continuity; there are but a handful of cars in the world with a design that, like the Golf's, has been refined, tweaked and enhanced down the decades and has thereby become timeless." Klaus Bischoff, Head Designer, Volkswagen Brand: "The Golf's unmistakable product features include the typical C-pillars, the long roofline and typical window line as well as the characteristic front and rear sections with their horizontal elements. These details make the new Golf more independent, sophisticated and durable than the majority of other compact cars. You could also say that the Golf's design is inherently stable."

Premium proportions. "The language of form," says Bischoff, "is logical, solid, product-focused, pure and precise and reflects the brand's design DNA as a perfect model of creativity. The base architecture of the new Golf is therefore unmistakable. It feels uncomplicated, strong, comprehensible, reliable and safe. Starting with the pure element of this clear base architecture, details such as the economical use and placement of sculptural lines are more like fine nuances. Also extremely important is the fact that the proportions of the Golf Mk7 have changed significantly, making the car look more confident than ever." Marc Lichte, lead exterior designer, explains: "The proportions have changed so significantly because we have taken advantage of the Modular Transverse Matrix here. The front wheels, for example, were moved 43 millimetres further forward. This makes the front overhang shorter, and at the same time the bonnet looks longer." Klaus Bischoff confirms this: "Visually, the passenger compartment has been shifted towards the rear, creating what is called a 'cab backward' impression. That's what we call the proportions of premium-class vehicles, where the bonnet is long and the passenger compartment a long way towards the back. On the new Golf, we thus have proportions that you otherwise only get in higher-class segments of the market."

Der Golf.
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Golf exterior one of the world's most recognisable product designs

Seventh stage of Golf evolution clearly shows added dynamism and precision

Golf reflects par excellence the principles of Volkswagen design DNA

Design-DNA

Wolfsburg/Porto Cervo, October 2012. There is but a handful of cars with a design that, like the Golf's, has been constantly refined, tweaked and enhanced down the decades and has thus become timeless. In this process, Volkswagen designers repeatedly gave a new edge to the Golf's product features. These include the typical C-pillars, the long roofline and the characteristic front and rear sections. These details also make the new Golf more independent, sophisticated and durable than any other compact car.

The design of the new Golf

In developing the new Golf, the teams led by head designers Walter de Silva (Group) and Klaus Bischoff (Brand) based their work on a great deal of creative freedom that allows many different approaches for a new design, while also focusing on the principles of the Volkswagen design DNA. A look at this DNA reveals the key to the new Golf's design.

Development of the DNA. Over recent years, the Volkswagen designers have crystallised a selection of core elements from the brand's history, which they term its 'historic DNA'. All current Volkswagen designs correspond to this DNA, with the cars therefore conveying a modern, progressive impression, which nevertheless – and this is the key – feels familiar. This DNA includes elements such as the reduced form of the radiator grille crossbeam, the look of the side windows as well as the first Golf's roofline and the Golf Mk4's typical C-pillars and wheel arches.

This DNA creates a unique, unmistakable language of product features and design. The language of product features leaves a familiar feeling, and yet it creates a new sensation in the eyes of the observer. The features are visual characteristics such as functionality, robustness, honesty and reliability. These characteristics are generated by a language of form

perfected over many years. It creates the typical Volkswagen product design that today enjoys success around the globe.

Premium proportions. "This language of form," explains Bischoff, "is logical, solid, product-focused, pure and precise, and it reflects the brand's design DNA as a perfect model of creativity. This makes the base architecture of the new Golf unmistakable. It comes over as simple, strong, understandable, reliable and safe. When one begins with the pure element of this clear base architecture, details such as the economical use and placement of sculptural lines seem more like fine nuances. Another extremely important point is that the Golf's proportions have completely changed with the seventh generation, making the car look more confident than ever before!"

Marc Lichte, lead exterior designer, explains: "The proportions have changed, as we have taken advantage of the Modular Transverse Matrix here. The front wheels, for example, have moved 43 millimetres further forward. The front overhang is therefore shorter, while the bonnet looks longer." Klaus Bischoff confirms this: "Visually, the passenger compartment has been shifted towards the rear, creating what is called a 'cab backward' impression. That's what we call the proportions of premium-class vehicles, where the bonnet is long and the passenger compartment a long way towards the back. On the new Golf, we thus have proportions that you otherwise only get in higher-class segments of the market."

Side profile has powerful lines. Marc Lichte: "And we sought to emphasise these modified proportions with design elements. Below the door handles, we have integrated the now clearly visible and very sharp character line. While this line is interrupted by the wheel arches, it is otherwise continuous and is stylistically reflected in the chrome bars of the radiator grille and headlights and at the back in the white lateral bars of the rear light clusters. Set deep down all the way around, this line lowers the visual centre of gravity and gives the car a more solid stance on the road. Another striking element is the new line along the side shoulder directly below the windows. This line begins at the front in the headlight, and then glides under the wing mirror, which is positioned right on the line, all the way through to the rear side window, underscoring the premium proportions of the new Golf." The wheel arches are particularly prominent as well, and along with the wider track, longer wheelbase and tyre dimensions of up to 18 inches, they make the Golf appear more powerful.

"Two other features," explains Klaus Bischoff, "are characteristic of the new Golf silhouette: the C-pillar and the roofline. On the previous Golf, the character line still cut through the C-pillar. This is no longer the case on the new Golf. The C-pillar runs along one homogenous surface from the start of the roof all the way to the rear wheel arch. Above the wheel arch, however, it picks up more strongly the entire width of the car – and as a result, when viewed from behind or diagonally from the rear, the new Golf looks more solid and powerful. Viewed from the side, the precision of the C-pillar design catches the eye; it resembles the drawn string of a bow, giving the Golf a look of acceleration even while it is standing still. At the same time, it pays homage to the Golf Mk1 and Mk4 – both design icons." On the right-hand side of the vehicle, even the shape of the fuel cap is integrated into this arrow element. Head Designer Klaus Bischoff continues: "The contour of the roofline has also been completely redesigned. Here – above the side windows – the Golf now displays another line, which runs from the roof-edge spoiler right through to the A-pillars. It is one of those character features that give the Golf a particularly sophisticated look from the side as well – a line that at first glance may remain unnoticed, yet is a further detail en route to visual precision."

Front section. The Volkswagen design DNA manifests itself in a ‘face’ that has appealing features. In addition, in the same way as on the first Golf, it defines horizontally balanced elements that create a certain width. Together they produce a front section that is recognisable in every rear view window as that of a Volkswagen. Each Volkswagen class has its own character attributes in this respect. In the Golf class these include, for example, the slightly upward sweeping headlights and a defined maximum height for the radiator grille.

Compared to its predecessor, the new Golf displays completely restructured modulation of its surfaces. While on the Golf Mk6 the wings were higher than the bonnet – effectively framing it – this is now the other way round. On the sides, the crease lines form the wings’ lowest points, before the latter transition vertically into the wheel arches. The top border of the wings is formed by a line, as if cut by a knife, which begins at the A-pillars. All of the lines together form a V-shaped bonnet.

Beneath the bonnet come the redesigned headlights and the comparatively narrow band of the radiator grille. At the bottom, the radiator grille is bordered – to the left and right of the chrome VW badge – by a chrome bar, which in the case of fitting with xenon headlights is continued in the headlight housing. Particularly striking are the LED daytime running lights of the xenon headlights. Meanwhile the bottom air inlet, in conjunction with the body-coloured area beneath the headlights, supports the strong horizontal layout of the front section design. The air inlet is now framed by a body-coloured area that even with the car’s very confident look gives it the typical Volkswagen smile. Another core design element is the bend at the outer ends of the bumper, which produces – especially in a top view – an alternation of shapes.

Rear section. Typical Golf elements at the rear include the clear geometry of the rear lights, the rear window stretching all the way to the C-pillars and the large uniform surface around the Volkswagen badge. Iconic: even without the badge or model name the seventh generation of this best-seller is instantly recognisable as a Golf. And yet every line is new. That applies both to the rear light clusters that terminate narrower on the inside and terminate parallel to the C-pillar on the outside (with striking L-shaped light contours) and to the tailgate, which reaches much lower down and offers the lowest boot sill height in its class (665 mm). A horizontal light-refracting edge near the bottom of the tailgate, which continues on the bumper, and the boot sill running parallel below this emphasise the sportily full width of the new Golf. These elements also correspond to the lines of the now much more pronounced bumper that is visually “pulled out” towards the rear. The bumper itself is fully painted right down to the bottom, with only the centrally integrated diffuser, which also incorporates the exhaust pipe, kept black.

Up to 100 kg less weight noticeably reduces fuel consumption

Body-in-white weighs 23 kg less thanks to progressive design

Innovative manufacturing methods reduce weight and enhance safety

-100 kg

Wolfsburg/Porto Cervo, October 2012. Saving up to 100 kg in weight is a complex task, especially in the compact class. The fact is that not every carmaker is pursuing the route of lightweight design – searching for every last gram – as methodically or thoroughly as Volkswagen. The reason is clear: intensive research and development work costs money. And yet, the base price of the seventh generation Golf, which has not gone up by a single cent despite its higher specification, is a reflection of the innovative power of this brand.

Overall vehicle – how savings add up to 100 kg

If you partition the Golf up into the primary areas of electrical, engines, running gear and superstructure, an analysis yields – depending on model, specification and type of engine – the following split for the weight reduction:

Up to -6.0 kg – Electrical
Up to -40.0 kg – Engines
Up to -26.0 kg – Running gear
Up to -37.0 kg – Superstructure

In purely mathematical terms the total potential saving is thus even as much as 109 kilograms. Due, however, to the configuration options that can be implemented in practice, the maximum achieved in any one vehicle is 100 kg. The greatest weight reduction is achieved from the engines and superstructure. It is particularly interesting to look into the details of the superstructure (car body and interior) and the 37 kilograms saved here, as it shows how lightweight design that is compatible with large-scale production can be achieved in 2012.

Superstructure – how savings add up to 37 kg

-0.4 kg – Dashboard
-1.4 kg – Module cross-member (beneath dashboard)
-2.7 kg – Air conditioning
-7.0 kg – Front and rear seats (depending on version)
-23.0 kg – Body
-2.5 kg – Miscellaneous.

Dashboard. 0.4 kg does not sound like much. But this is where perfection in the details comes into play. If 0.4 kg is overlooked, then ultimately a 100 kg will never be attained. Volkswagen not only succeeded in making the dashboard 20 per cent lighter thanks to a new thermoplastic foam injection process – the load-bearing, sandwich-like structure beneath the elegant surface consists of this material – but also in making it 20 per cent more rigid at the same time.

Module cross-member. The 1.4 kg saved here also contributes towards overcoming the upward weight spiral. Mounted on the module cross-member are both the steering gear and the dashboard. Altogether the cross-member weighs 5.8 kg. The reduction in weight was achieved with a lightweight design approach utilising steel components. Based on an analysis by Finite Element Method (FEM) computations, the structure of the module cross-member was designed to be as light as possible and as strong as necessary. Optimal steel wall thicknesses and structural design measures, such as specially worked-in corrugations, improved the rigidity of the cross-member, while also reducing its weight by the noted 1.4 kg. Utilising methods such as the Finite Element Method, engineers at Volkswagen are essentially emulating examples found in nature, where the natural world is able to attain an astonishing ratio between the cross-section of a part's structure and its rigidity – e.g. in a stalk of grass or grain. That is the right way to go.

Air conditioning. The Golf's entire air conditioning system has been redesigned and, as noted, is 2.7 kg lighter. Independent of its weight, all of the Golf air conditioning units with their highly efficient refrigerant cycles set standards in terms of comfort and efficiency. That is because they run very quietly (up to 5 dB(A) lower), they reach the desired temperature significantly faster and are very energy-efficient (up to 4 Amperes less) due to a new type of blower control with intelligent climate control. The 2.7 kg weight reduction is achieved by such design modifications as optimised wall thicknesses of various system components, reduced diameters of pressure lines, a new fastening system and a weight-optimised high-performance heat exchanger.

Seating system. Along with numerous minor modifications to the seats, weight was reduced in other areas – especially in the rear backrests – to save a total of up to 7 kg. Once again, the Finite Element Method (FEM) and high-strength steels combined with laser welding made it possible to optimise wall thicknesses and profile geometries. Engineers achieved weight savings of over 15 per cent in this way and by using lighter backrest latch mechanisms.

Body. The body must be strong to guarantee optimal safety and maximum comfort. Nonetheless, its structure should remain athletically lean, so that the overall vehicle is light and efficient. Strong yet lightweight – harmonising these two parameters continues to be one of the greatest challenges in the automotive world. Especially when a car – like the Golf – needs to be an affordable car for millions of people. Highly expensive materials like aluminium, magnesium or even carbon-fibre are therefore excluded in this segment – at least when they are used in grand style. That is why Volkswagen relies on the synergies of

the Modular Transverse Matrix (MQB), innovative utilisation of high-strength steels and advanced production methods. The success of this approach is demonstrated by realisation of a 23 kg reduction in weight in the car body structure – without additional costs – while satisfying more stringent crash and rigidity requirements and implementing larger vehicle dimensions.

Body-in-white – how savings add up to 23 kg

-12 kg – Use of high-strength and advanced high-strength steel grades and reduction of sheet metal thickness
-4 kg – Only using materials where they are needed
-7 kg – Optimising profile and surface geometries.

High-strength and advanced high-strength steel grades. The share of high-strength steels has grown from 66 per cent to 80 per cent compared to the Golf Mk6. The decisive advantage lies in the fact that Volkswagen has built up extensive know-how in the development and production of ultra-high-strength, hot-formed parts since the Golf Mk6 and has invested in manufacturing facilities – more than any other carmaker in the world. The share of these parts that are up to six times as strong as conventional steel parts has grown from six per cent in the Golf Mk6 to 28 per cent in the new Golf. Moreover, new advanced high-strength steels are available on the market today that did not exist when the previous model was being developed. These represent another nine per cent in the new Golf. The advantage of these extremely strong steels: the finished parts made of them can be designed to be considerably thinner than before and still handle the stresses of a crash. Nearly the entire safety architecture of the new Golf consists of these steels, which effectively form the vehicle's backbone. And yet hot-forming also saves a total of 12 kg in weight.

Only using material where it is needed. The second lightweight design strategy – to only use material where it is needed – is an obvious one. Yet, it has been perfected in the new Golf. This effort even goes so far as to precisely vary the sheet metal thicknesses within a part; this is done at the rolling mill of the steel supplier, which delivers a tailor rolled blank (a rolled blank with variable thickness) to the hot-forming facility. One advantage compared to conventional tailored blanks is that eleven zones can be produced within a cross-member, each with optimal sheet thickness. The transitions between the different sheet thicknesses are uniform here and do not exhibit any abrupt changes in strength. The savings for just these parts: -4 kg.

Optimising geometries. Geometries of the load-bearing structure and surface parts have been optimised for many years. Continually improved virtual methods in the development process can be used to utilise existing installation spaces even more effectively. Take the example of the longitudinal frame member. Optimal utilisation of the mounting space between the engine and the front of the chassis enabled a 25 per cent increase in profile cross-section, which in turn enabled the use of thinner stock. Nonetheless, the entire front structure of the new Golf can absorb more energy in a frontal crash – thanks to geometry that is computationally optimised by FEM. In the case of surface parts such as the bulkhead and the floor, computationally optimised, acoustically effective corrugation patterns were introduced that also make the sheet metal more rigid and in turn lead to a reduction in sound insulating measures. Just these mentioned examples result in a weight reduction of seven kg.

New production methods. Welding processes and innovative tools also make a decisive contribution towards attaining high quality in body manufacturing. They are used to join and assemble all components – including the hot-formed steels and tailor rolled blanks.

Some of them are making their debut in the new Golf. They include the laser clamp welder. This tool enables what are referred to as wobble welds, which are able to produce the joint between parts on a short flange. The 'wobble' describes the sinusoidal path of the laser weld seam.

Hot forming. Hot-formed parts have an extremely high tensile yield strength of 1,000 MPa (Megapascal), which is over six times the strength of conventional deep-drawn steels and up to four times the strength of conventional high-strength steels. In the hot-forming process, a red-hot blank, heated to approximately 950 degrees Celsius, is inserted in the forming tool, formed in a work process and then quickly cooled in the tool. Excellent material properties are realised here.

Acoustics perfected. In professional circles, the sixth generation Golf was already considered the quietest car in the compact class. Volkswagen set out to solidify this position with the new Golf. Therefore, innovative simulation tools were employed in the development of the seventh generation Golf; these tools were used to very precisely evaluate conceptual and component layouts with regard to their comfort and acoustics early on. This type of evaluation analyses parameters such as vibrations and sound pressure, which are perceived directly by the driver and passengers in the car. As a result, it was possible to transfer the high level of acoustic comfort of the previous model to the new Golf, despite substantial weight savings.

Example of running gear: The screw fastening concept for the front suspension was simplified, while the joining points were optimised for the modular performance suspension that is used for all Golf cars from 90 kW. This makes it possible to attain the greatest effect for acoustic ride comfort compared to the usual stiffening measures that are taken. The structure in the vicinity of the chassis leg connection to the occupant cell and the entire area around the strut towers were designed to minimise acoustic noise transmission to the interior. Specifically, engineers achieved a 5 dB reduction in ride noise compared to the previous model here.

Along with minimising the noise caused by unevenness of the road surface and running gear compensation for this, the development group also focused on eliminating engine noises as much as possible. In particular, the transmission of engine noise was reduced to an excellent low level in the conceptual design of the front subframe, as well as the zones around the strut towers, windscreen and firewall.

Engine mounts. A considerable share of optimal ride and vibration comfort is based on the method used for engine mounting. The mount elements were completely redesigned, while retaining the pivot bearing concept. Despite reductions in component weights, performance of the engine mounting system was improved. Along with reducing the amount of structure-borne noise (from the engine), important improvements were made in vibration damping; they were achieved by optimising the geometries of the engine and gearbox bearings. The new engine mount system for the Golf results in smaller movements of the engine assembly; and that is precisely what optimises ride comfort.

Quieter engines. As already noted, the new Golf is also launching with a new lineup of petrol and diesel engines. In these engines, acoustic needs were already addressed in the early development phase. Consider the TDI: by considering requirements early in its development, specific engine-related acoustic measures were implemented in the package to reduce the air-borne noise emissions directly at the source. This also included measures for optimal acoustic integration of the oxidation catalytic converter, the charge air tube,

oil sump and dampers on the crankcase on the firewall side. In addition, encapsulating the engine compartment in a sound-absorbent material ensures conditions remain quiet both inside and around the Golf.

Wind, environmental and background noise. Thanks to the good aerodynamics of the new Golf, wind noises are effectively reduced; meanwhile, environmental noises are absorbed for the most part by the elaborately sealed body. However, comprehensive noise insulation of the engine and chassis involved the risk that background sounds – e.g. from the blower, actuator motors, toothed belts or the turbocharger – might be perceived, while they were masked by engine noise in the previous model. This problem was solved as well: intensive detailed work reduced or eliminated background noises right at their sources. This largely avoided the need for additional, secondary acoustic measures in these areas.

Acoustic windscreen. Just as in the sixth generation Golf, an acoustically effective damping film is used in the windscreen of the new Volkswagen as well. This film especially reduces noise or sound waves in the frequency range from 2.5 to 3.5 kHz. In addition, the use of absorbers in the front doors and innovative design of the door seals has achieved a further reduction in the amount of environmental noise that finds its way into the interior. The complete package of all acoustic measures has made the new Golf one of the quietest cars in its class.

New Golf offers noticeably more space and comfort

Well thought-out package increases boot space to 380 litres

First Volkswagen with inductive antenna interface for smart phones

+ 30 l

Wolfsburg/Porto Cervo, October 2012. At 4,255 mm the new Golf is 56 mm longer than the previous model, while the wheelbase has also been increased by 59 mm to a new 2,637 mm. Since the front wheels are also located 43 mm further forward, the interplay of the new dimensions creates sportier proportions, an improved crash structure and optimised interior space. At the same time, the body has been lowered in height by 28 mm (1,452 mm) – but headroom in the interior is still very good. On the exterior, aerodynamics have also benefited from the reduced height: the vehicle's frontal area has been made 0.03 m^2 smaller and its aerodynamic drag (c_D x A) has been reduced by almost 10 per cent. The Golf BlueMotion, for example, achieves a c_D value of 0.27 and is thus one of the best performers in its class. Nonetheless, at 1,799 mm the new Golf has been designed to be 13 mm wider. In parallel, the track widths have been increased by 8 mm in front and 6 mm at the rear. These additional millimetres give the Volkswagen a fuller stance on the road.

Space concept – more space over its length

The slight increases in length and width, as well as the increased wheelbase and optimised track widths, have a perceptible effect on space in the interior, which is now 14 mm longer (1,750 mm). Passengers in the rear seating area, in particular, can now enjoy 15 mm more knee room. Shoulder room has grown by 31 mm to 1,420 mm. Elbow room is increased by 22 mm to 1,469 mm. In the rear seating area, shoulder room was also improved by an additional 30 mm and elbow width by 20 mm.

The Golf Trendline and the mid-level Comfortline equipment line can be ordered with a front passenger backrest that folds completely forward. In addition, the 60:40 split backrest that is standard in all versions of the new Golf can be folded down. When folded, a nearly level cargo floor is created with a length of 1,558 mm; the maximum cargo space length with

the front passenger backrest folded is 2,412 mm. From the Comfortline, the Golf can also be equipped with a cargo opening at the middle of the rear backrest.

The successfully implemented space concept of the new Golf exhibits many other improvements as well. Cargo capacity, for example, has grown by 30 litres to 380 litres; the variable cargo floor can also be lowered by 100 mm. Perfection in the details: the load sill to the bootspace is now just 665 mm (-17 mm) high – the best value in the core segment. In parallel, the maximum bootspace width has grown by 228 mm to 1,272 mm. Volkswagen has also increased the width of the bootspace opening by 47 mm to 1,023 mm.

Styling and controls – sophisticated, intuitive

Significantly more room and even better ergonomics define the driver's area. Taller drivers in particular will welcome the seat position that has been shifted back by 20 mm; the steering wheel's adjustment range has also been modified. Pedal distances have been optimised as well thanks to the Modular Transverse Matrix; the space between the brake and accelerator pedals, for example, has increased by 16 mm. Another ergonomic improvement: compared to the previous model, Volkswagen has raised the position of the gearbox controls by 20 mm; the gear shift grip now rests better in the driver's hand.

Tomasz Bachorski, Head of Interior Design: "Every interior element has been redeveloped and redesigned. One noticeable feature here is the wide centre console that is oriented towards the driver, which is more typical of the premium class than the compact class. Never before have the traditionally high levels of objectivity and functionality in the Golf been implemented with such elegance and sophistication." In the middle of the centre console, beneath the switch for the hazard warning lights, is the five- to eight-inch infotainment touchscreen with its menu keys and dials. All information and entertainment systems have been completely redeveloped and restyled. For the first time, Volkswagen is introducing a generation of touchscreens with a proximity sensor and a function that reacts to wiping movements by the fingers (wipe and zoom movements as used on smart phones); the graphic design of the interface also corresponds to the new age of intuitive operation.

Located beneath the infotainment module are the well laid-out controls for climate control. This is followed by the lower section of the centre console that runs in a line up to the large centre armrest. The consistent design conveys a sense of sophistication of a premium class model. To the right of the driver are the buttons for the new electronic parking brake and its Auto Hold function. Integrated in front of it is a storage compartment in which the multimedia interfaces (aux-in, USB and optional Apple interfaces) have been integrated. The compartment is also big enough to hold a smart phone.

There is a large storage compartment hidden under the centre armrest that can be adjusted by up to 100 mm in length and five stages in height. This compartment is also of a good size. For the first time in a Volkswagen, there will also be an inductive link to an external aerial. The mobile phone is placed in a universal holder in the stowage bin where the phone's antenna gets inductively "coupled" and connected to the vehicle's external aerial. This produces the same advantages as with a fixed phone installation:

- Better reception and signal strength because an external aerial is being used.
- Less drain on the mobile phone battery. By linking to an external aerial, the phone only needs minimal power to send and receive.
- Minimal radiation in the passenger compartment.

Tomasz Bachorski again: “Visually distinctive in the interior – along with the centre console is the dashboard body, the upper section of the dashboard that is upholstered with a plastic material that is visually elegant and pleasing to the touch. It is subdivided by a seam that runs across the entire interior width towards the windscreen. Each of the outer areas of the dashboard body fuses homogeneously with the window sill on each side.” Like the lower area of the dashboard, the lower door trim can also be ordered in a contrasting colour. Elegant: the inlays in the door panels have illuminated trim as part of the ambient lighting fitted as standard in the Highline. The switches for the electric windows are ergonomically easy to access in the armrests; located in front of the door handle on the driver’s side is the control for electric mirror adjustment. The door trim panels themselves display the motif of two intersecting curved lines, which logically divide the door trim’s functional areas: armrest, door handle, storage bin and loudspeaker. Elements of the ambient lighting provide for optimal illumination and an elegant atmosphere at night. Tomasz Bachorski: “The new, white lighting of the buttons and switches underscores the premium feeling.”

Seat comfort – ergonomics from the premium class

The seats of the new Golf are pioneering in their comfort. All five seating positions have been redesigned, front and rear. The seats exhibit excellent core properties: well-contoured body lines, optimal support for dynamic driving, and a high level of comfort on long trips. These characteristics were achieved by designing the foam contours to properly fit body shapes and by the optimised springing and damping properties of the cold foam cushioning sections. The two higher specification models, the Comfortline and Highline, are equipped with standard two-way lumbar support on the driver and front passenger seats. The optional 12-way electric driver’s seat offers even greater individual adjustment.

Another new development making its debut in the Golf is the ergoActive seat with extended adjustments for the driver. Along with the familiar seat height adjustment and seat heating, new features for this class of vehicle are adjustment options for seat depth and angle, electric four-way lumbar support and a massage function. The ergoActive seat also offers exceptionally good ergonomic properties, which have already earned it the internationally recognised AGR quality seal.

First Volkswagen touchscreen with proximity sensor

Display automatically switches to operating mode as hand approaches

Three display sizes (5, 5.8, 8-inch); includes navigation updates for three years

SENSOR

Wolfsburg/Porto Cervo, October 2012. Volkswagen is equipping the Golf with a new generation of radio and radio-navigation systems with completely new designs. All systems have a touchscreen as standard. The new device generation is available in six extension levels and in three different display sizes: 5-inch, 5.8-inch and 8-inch. For the first time, Volkswagen is implementing displays that have proximity sensors (5.8-inch display and above): as soon as the driver or front passenger moves a finger near to the touchscreen, the system automatically switches from display mode to input mode. The display mode shows a screen that is reduced to just the essentials. In the operating mode, on the other hand, the elements that can be activated by touch are specially highlighted to simplify intuitive operation. The displays also have a function that lets users scroll through lists or browse CD covers in the media library with a wipe of the hand.

In designing the new generation of devices, Volkswagen's primary goal was to integrate the most advanced infotainment applications into the Golf, which should be consistently easy to use – despite all of the complexity of today's systems – i.e. they should be totally intuitive and therefore safe to use while driving

Basic touchscreen – trip computer and interface

Standard display (5-inch). The standard unit in the new Golf is a 5-inch black-and-white display. The functional scope of the production module includes trip computer information (average fuel economy, etc.), clock time and date, service menu (oil change status, etc.), vehicle settings (e.g. winter tyre warning), adjustment of instrument lighting, language setting, climate control menu, Eco-HMI displays (information on power consumers and tips for an especially economical style of driving) and – depending on vehicle features – steering wheel heating, the visual display for the ParkPilot and driving profile selection.

Radio systems – proximity sensor starting with 5.8-inch model

'Composition Touch' radio (5-inch). The next level system specification comes as standard starting with the Comfortline in countries such as Germany and is otherwise available as an option. There are three buttons to the left and three to the right of the touchscreen that are used to activate the 'Radio', 'Media', 'Car', 'Setup', 'Sound' and 'Mute' menus/functions. It also offers a SD card slot, aux-in interface and two push dials (e.g. for on/off, volume, mute). This standard module also includes an FM/AM radio, loudspeakers (front), an interface for SD cards and an aux-in interface.

'Composition Colour' radio (5-inch). Similar to the Composition Touch in its device layout, the Composition Colour is also equipped with such features as a colour display, FM/AM radio as well as front and rear loudspeakers and a CD drive (MP3 compatible). The CD drive is located in the glovebox along with the SD card slot.

'Composition Media' radio (5.8-inch). Equipped to offer even more extensive features is the Composition Media radio. Its capacitive colour display is 5.8 inches in size, and it is coupled with a proximity sensor that is integrated across the area beneath the display. The display also responds to wiping and zooming gestures, as used in similar fashion on modern smart phones. There are now also four buttons to the left and four to the right of the touchscreen; in contrast to the 5-inch systems they also enable access – depending on vehicle features – to the 'Phone' and 'Voice' (voice control) menu levels. The Composition Media radio is equipped with these features in addition to those of the Composition Colour radio: optional telephone preparation (Bluetooth) and a USB interface. The USB and aux-in interfaces, meanwhile, are integrated in a separate compartment on the centre console in front of the gear shifter; this compartment also offers storage space for a smart phone.

Radio-navigation systems – map data updates included

'Discover Media' navigation function (5.8-inch). The Composition Media radio can have a navigation module (Discover Media) added to it. The features and functions are identical except for the navigation system that is then integrated with European map data and the associated second SD card slot; the navigation computer is located in the glovebox together with the CD player and SD card slot. The price for all units with a navigation module includes updates of the European navigation maps for a period of three years.

'Discover Pro' radio-navigation system (8-inch). The top radio-navigation system with a large 8-inch capacitive touchscreen is known as the Discover Pro. Features installed here – beyond those of the Discover Media – are a DVD drive instead of a CD drive (audio and video), extended premium voice control (base version is available as option for Composition Media and Discover Media), 3D navigation and a 64-GB Flash memory; a UMTS telephone module is available as an option. Integration of the Compact Disc Database from Gracenote also enables state-of-the-art playback and management of media. In addition, the Discover Pro also operates as a WLAN hotspot (Internet access) for WLAN-capable mobile devices (smart phone or tablet).

Same base price, but more comprehensive set of features

Multicollision brake, touchscreen, XDS, air conditioning and ESC all as standard globally

Golf Highline has xenon headlights and Alcantara sports seats

Wolfsburg/Porto Cervo, October 2012. The new Golf – available at launch in three model lines, the Trendline (base model), Comfortline and Highline (top version) – has been enhanced in all areas compared to the previous model. Nonetheless – and this fact is attributable among other factors to the synergies produced by the Modular Transverse Matrix – it has not become any more expensive to own a Golf. In Germany, for example, the new Golf 1.2 TSI Trendline delivering 63 kW / 85 PS costs € 16,975. The price is thus exactly the same as the now superseded entry-level model delivering 59 kW / 80 PS (Golf 1.4 MPI). Compared to the Mk6 model with a comparable engine – also a Golf 1.2 TSI delivering 63 kW / 85 PS – this actually produces in real terms a price reduction for the new Golf of € 455. If you include in the price comparison the new Golf's additional standard equipment (features like the 5-inch touchscreen, multicollision braking, XDS and Stop/Start system), the price advantage in favour of the new model works out much greater still!

Golf Trendline

All seventh generation Golf cars sold around the world will be fitted with seven airbags and Electronic Stability Control (ESC). Compared to the previous model, the added standard features on the Golf Trendline include items such as the touchscreen module with 5-inch TFT display, a fuel filler neck with a guard to prevent use of the wrong fuel (for the diesel versions), the luggage compartment cover (stowable), ECO-HMI (fuel economy related graphics and information on the multifunction dashboard display), multicollision braking system, electronic parking brake with Auto-Hold function, the XDS transverse differential lock, tyre pressure indicator plus, battery regeneration mode, Stop/Start system and a variable floor in the boot.

Also standard (excerpt): daytime running lights, air conditioning, electrically adjustable wing mirrors, outside temperature indicator, electric windows, rear window wiper with

intermittent setting, electromechanical power-steering, safety-optimised head restraints, locking glovebox, chrome rings around the inside air vents, Easy Entry system (two-door versions), centre console with storage compartment, asymmetrically split fold-down rear seatback, steering column with height and length adjustment, height-adjustable driver's seat, dust and pollen filter, central locking with remote control, height adjustment and belt-tensioning system for the seat belts in the front, disk brakes on all wheels, 195 tyres (15-inch), rear diffuser, green-tinted heat-insulating windows.

Golf Comfortline

Compared to its predecessor the mid-range Comfortline is additionally equipped with the ParkPilot system, front and rear, a high-quality instrument cluster, drawers under the front seats, the new Composition Touch radio system including SD card interface and the fatigue detection system.

Other standard features (excerpt, in addition to Trendline features): Comfort seats featuring the line's own seat material and lumbar support in the front, rear bench seat with central armrest and opening for loading long items, chrome-look rotary light switch and wing mirror adjuster, storage pockets on the front seat backs and a closable storage compartment in the roofliner, an additional 12-V socket in the boot, illuminated vanity mirror, fabric floor mats, steering wheel and gear lever knob in leather and 16-inch alloy wheels.

Golf Highline

New features of the top version of the new Golf compared to the Highline version of the Golf Mk6 are the new ambient lighting and a chrome surround for the Volkswagen logo in the radiator grille. Features in addition to those of the Golf Comfortline (excerpt): sports seats in front (Alcantara centre panel and fabric inner side supports), chrome accents for the electric window switches, LED reading lights in the front and rear, automatic climate control, multifunction steering wheel, heated windscreen washer jets and heated front seats, xenon headlights plus headlight washers, dark red rear lights, customised 17-inch alloy wheels including cornering lights with chrome trim.

Optional features

Along with technology highlights such as the new radio and radio-navigation systems with touchscreen, the new panoramic tilt/slide sunroof, adaptive antenna coupling for smart phones and various assistance systems, a classic programme of optional features is naturally also offered in the Golf.

Twelve colours. Beyond these features, customers have nearly endless customisation possibilities in the best-seller. They include ambience lighting, swivelling towbar, rear side airbags, dynamic chassis control (DCC), a sport chassis (ride height lowered 15 mm), the standard colour "Urano Grey", the special colours "Pure White", "Tornado Red" and "Black", the metallic paints "Night Blue", "Pacific Blue", "Limestone Grey", "Reflex Silver", "Sunset Red" and "Tungsten Silver", the pearl effect tone "Deep Black" and mother of pearl effect colour "Oryx White". Colour coordinated is the "Vienna" leather upholstery of the sport seats in front.

Keyless opening and engine starting. Last but not least, details such as the Light and Sight pack (automatic running light switching with "leaving home" and "coming home" functions, automatically dimming rear-view mirror, rain sensor), a multi-colour multi-functional display, xenon and bi-xenon headlights (the latter with LED daytime running lights and cornering lights) and the Keyless Access locking and engine starting system which can be used to tailor the new Golf to personal requirements.

Six types of alloy wheels. The customisation programme also includes 16-inch “Toronto” and “Perth” alloy wheels (with size 205/55 R16 tyres), 17-inch “Geneva” and “Madrid” alloy wheels (with size 225/45 R 17 tyres), the “Dijon” alloy wheels that are standard on the Golf Highline and 18-inch “Durban” alloy wheels together with sport chassis and size 225/40 R 18 tyres.

New Golf is first Volkswagen with multicollision brake system

Standard multicollision brake system reduces severity of secondary collisions

Golf makes debut with proactive occupant protection system and progressive steering

Wolfsburg/Porto Cervo, October 2012. The new Golf is the first car in the compact class in which – despite significant gains in comfort and safety – the weight of the car has been reduced by up to 100 kg. This fact underscores Volkswagen's success in the mass production of progressive automobiles. In parallel, an armada of new technologies substantiates the innovative power of the brand in the compact class. In the Golf, these technologies are more attainable for more people than ever before.

New systems – optimised safety and convenience

New assistance systems include the multicollision brake – the Volkswagen Group is the only carmaker in the world to implement such a system as standard in a compact car –, a proactive occupant protection system, standard XDS transverse electronic differential lock (as found in the previous generation Golf GTI), the adaptive cruise control system ACC plus Front Assist including the City Emergency Braking function, Lane Assist lane-keeping assistant, fatigue detection, traffic sign detection and the latest generation of the ParkAssist park steering assistant (including warning for obstacles in the vehicle's surroundings with 360-degree display) as well as the automated light functions Light Assist and Dynamic Light Assist. There are other new technologies as well, such as progressive steering (optimised dynamic performance and better comfort), driving profile selector with up to five modes ('Eco', 'Sport', 'Normal', 'Individual' and, in combination with DCC, 'Comfort'), an electronic parking brake, a newly developed ergonomic sport seat (ergoActive seat), a guard against using the wrong fuel in the diesels, a new deluxe climate windscreen that is also a first in this segment and a new generation of information and entertainment systems.

Assistance systems – automatic protection

Multicollision brake system. An innovative new feature is the Golf's multicollision brake system, which has already won a safety innovation award from Germany's largest automobile club (ADAC). Background: studies in accident research have found that approximately one-fourth of all traffic accidents involving personal injury are multiple-collision accidents – what is meant here is that there is a second impact after the initial collision.

The multicollision brake system automatically brakes the vehicle when it is involved in an accident in order to significantly reduce its residual kinetic energy. Triggering of the multicollision brake system is based on detection of a primary collision by the airbag sensors. Vehicle braking by means of the multicollision brake system is limited by the ESC control unit to a maximum deceleration rate of 0.6 g. This value matches the deceleration level of Front Assist; it ensures that the driver can take over handling of the car even in case of automatic braking.

The driver can 'override' the multicollision brake system at any time; for example, if the system recognises that the driver is accelerating, it gets disabled. The automatic system is also deactivated if the driver initiates hard braking at an even higher rate of deceleration. Essentially, the multicollision brake system applies the brakes until a vehicle speed of 10 km/h is reached. This residual vehicle speed can be used to steer to a safe location after the braking process.

Proactive occupant protection system. The proactive occupant protection system is a typical example of a technology that is being transferred from the premium class to the compact class. Volkswagen first implemented the proactive occupant protection system in the Touareg. Now the system is making its debut in the Golf, making it one of the few vehicles in its class anywhere in the world to offer such a protection system.

If the proactive occupant protection system detects a potential accident situation – such as by the initiation of hard braking via an activated brake assistant – the seatbelts of the driver and front passenger are automatically pre-tensioned to ensure the best possible protection by the airbag and belt system. When a highly critical and unstable driving situation is detected – such as severe oversteer or understeer with ESC intervention – the side windows are closed (except for a small gap) and so is the sunroof. That is because the head and side airbags offer optimal support and thereby achieve their best possible effectiveness with windows and sunroof almost fully closed.

Adaptive cruise control. Until now, adaptive cruise control (ACC) was reserved for vehicles in higher segments such as the Volkswagen CC or Phaeton. Now ACC has arrived in the compact class with the Golf and is being offered at a low price of 555 euros (Germany). The system uses a radar sensor integrated into the front of the car. ACC operates over a speed range from 30 to 160 km/h with a manual gearbox and with DSG (dual clutch gearbox). In vehicles with DSG, adaptive cruise control intervenes to such an extent that the car may be slowed to a standstill, depending on the situation. In combination with Lane Assist, it may also automatically pull away in stop-and-go traffic. ACC maintains a preselected speed and a defined distance to the vehicle ahead, and it automatically brakes or accelerates in flowing traffic. The system dynamics can by individually varied by selecting one of the driving programmes from the driver profile selector available as an option.

Front Assist surroundings monitoring system. Front Assist works like ACC with the radar sensor integrated into the front of the car, which continually monitors the distance to the traffic ahead. Even with ACC switched off, Front Assist assists the driver in critical situations by preconditioning the brake system and alerting the driver to any required reactions by means of visual and audible warnings. If the driver fails to brake hard enough, the system automatically generates sufficient braking force to avoid a collision. Should the driver, meanwhile, not react at all, Front Assist automatically slows the car so that under optimal conditions the speed of any impact is minimised. The system also assists the driver by an alert if the car is getting too close to the vehicle in front. The new City Emergency Braking function is part of Front Assist.

City Emergency Braking. The City Emergency Braking function, now available for the Golf for the first time, is a system extension of Front Assist and scans the area in front of the car via radar sensor. The new system operates at speeds below 30 km/h. If the car is in danger of collision with a vehicle driving or parked up ahead and the driver does not react, the brake system gets preconditioned in the same way as with Front Assist. If necessary, City Emergency Braking then automatically initiates hard braking to reduce the severity of the impact. In addition, if the driver fails to press the brake pedal sufficiently, the system will assist with maximum braking power.

Fatigue detection. This system, which was first introduced in the current Passat, detects waning driver concentration and warns the driver with an acoustic signal lasting five seconds. A visual message also appears on the instrument cluster recommending taking a break from driving. If the driver does not take a break within the next 15 minutes, the warning is repeated once. At the beginning of each trip, the system analyses a range of factors, including the driver's characteristic steering behaviour. Once under way, the fatigue detection system continually evaluates signals such as steering angle. If monitored parameters indicate a deviation from the steering behaviour recorded at the beginning of the trip, then the visual and acoustic warnings are output.

Lane Assist. In the Golf, this camera-based lane-keeping assistant with steering intervention operates with extended functionality: adaptive lane tracking. If desired, the system – being implemented for the first time in the Golf – can now also maintain continuous tracking support, which optimises comfort and convenience. In addition, where necessary Lane Assist will correct the driver's steering: as soon as it becomes evident that the driver is leaving the driving lane or is driving over the lane markings without setting the direction indicator, the system gently steers the other way.

Convenience systems – steering, braking, seeing

Progressive steering. Conventional steering systems operate with a constant gear ratio. However, the new optional steering system in the Golf operates with a progressive gear ratio. This noticeably reduces steering work in manoeuvring and parking. On country roads with lots of bends and in turning, meanwhile, the driver will notice a gain in dynamic performance due to the more direct gearing; the driver also does not need to turn the wheel as often.

Technically, progressive steering differs from the basic steering system primarily by the rack and pinion's variable tooth spacing and a more powerful electric motor. Its functional difference: unlike with constant steering ratios, which by necessity always represent a compromise between dynamic performance and comfort, here the steering rack's toothing is modified by the steering stroke. As a result, the transition between indirect steering behaviour in the mid-range (straight-line driving) and direct steering behaviour at larger steering wheel angles is designed to be progressive, which, as noted above, enables significantly more agile steering behaviour in dynamic driving situations. The smaller steering wheel inputs make parking the car more comfortable, as the wheel needs to be turned less.

Variable ratios have long been known in the area of hydraulic steering systems; however, the tuning of such a steering system is subject to very tight limits, so that the driver is not overtaxed by the transitional behaviour. With the new progressive steering system in the Golf, the situation is completely different: the combination of the steering rack's progressive steering ratio and the tuning potential of an electro-mechanical steering system are systematically exploited in the Golf to realise optimised steering behaviour that is sporty yet practical in everyday driving.

XDS. A feature once developed for the Golf GTI is the XDS electronic differential lock, which is now standard in every Golf. It improves both traction and handling. Technically, XDS is a functional extension of the EDS electronic differential lock that was integrated in the ESP system. In fast cornering, as soon as the electronics detects slip at the wheel of the driven front axle located at the inside of the bend, the ESP hydraulics build up pressure specifically at this wheel to restore optimal traction. As a differential lock, XDS compensates for the understeer in quick cornering that is typical of front-wheel drive vehicles. This makes handling more precise and neutral.

Electric parking brake. For drivers of larger Volkswagen cars, such as the Passat or Tiguan, the electric parking brake is already taken for granted. Now, this handbrake is also making its way into the Golf. Instead of a handbrake lever, a control switch plus an Auto Hold switch are located on the centre console. The electric parking brake offers numerous advantages: eliminating the conventional handbrake frees up more space on the centre console; in addition, the brake is automatically released when driving off, making hill starts easier. Last but not least, the Auto Hold function prevents unintentional rolling from a standstill position.

Dynamic Light Assist – dynamic main beam control. Via a camera on the windscreen, the system analyses the traffic ahead and the oncoming traffic. Based on this data, the main beam automatically comes on at speeds of over 60 km/h and stays on. This is how Dynamic Light Assist works: with the help of the camera, the main beam modules of the bi-xenon headlights with dynamic cornering lights are masked only in those areas that the system has determined could potentially disturb other road users. Technically, this function is implemented by a pivoting masking aperture between the reflector with the xenon filament

and the lens. Along with lateral swivelling of the entire module and independent control of the left and right headlights, this additional aperture geometry is able to mask the light source and thereby avoid dazzling traffic ahead or any oncoming traffic.

Light Assist – main beam control. For models that have headlights without cornering lights, Light Assist is available – the base version of the main beam assistant. Light Assist analyses traffic ahead and oncoming traffic – via a camera in the windscreen – and automatically controls activation and deactivation of the main beam (from 60 km/h).

Traffic sign detection. Traffic sign detection initially made its debut in the Phaeton. In the new Golf it will be available in combination with a navigation system, because the traffic signs are also shown in the display of the active navigation window (map and/or pictograms). If the system detects any speed limit or 'No overtaking' signs via a camera (integrated in the windscreen near to the rear-view mirror), up to three of these will get shown on the instrument cluster in front of the driver and on the navigation system display. This will also include all additional information and the signs will appear in a logical order: ones that immediately apply (e.g. a "130" km/h speed limit) get shown in first place, while signs that only apply at certain times (e.g. "80 km/h" "When wet") appear in second place. If the rain sensor registers that it is starting to rain, the traffic sign that is now most pertinent, i.e. the "When wet" sign, moves up into first place.

Park Assist – park steering assistant. The latest version of the parking assistance system now facilitates not only assisted parking parallel to the carriageway, but also reverse parking at right angles to the road. In addition, Park Assist 2.0 is also equipped with a braking and parking space exit function. The system can be activated at speeds of up to 40 km/h by pressing a button on the centre console. Using the indicators, the driver selects the side on which the car is to be parked. If, using the ultrasound sensors, Park Assist detects a large enough parking space (a manoeuvring distance of 40 cm, front and rear, is sufficient), the assisted parking can begin: having put the vehicle into reverse, all the driver has to do is operate the accelerator and brake. The car takes care of the steering. Acoustic signals and visual information on the multifunction display assist the driver. If a collision is looming, the system can also actively apply the vehicle's brakes.

DCC. Making its debut with the new Golf is the second generation of DCC (Dynamic Chassis Control). It is the first vehicle of the Group in which this new system is being implemented. DCC still offers the three driving modes ‘Comfort’, ‘Normal’ and ‘Sport’, which are now selected and displayed via the touchscreen on the centre console as part of the higher-level “Driving Profile Selection” function. In the ‘Individual’ driving profile, the DCC mode can even be assigned other driving profile properties. The DCC system adaptively controls the damper valves, and thereby the setting of the damper characteristic, based on a further developed and refined Volkswagen control algorithm. DCC utilises the input signals from wheel displacement sensors and accelerometers as well as vehicle information from the Chassis-CAN bus; it uses these values to compute and set the optimal damping force for every driving situation. This largely resolves the conflict between comfortable and sporty chassis tuning.

In the new Golf, the DCC chassis was lowered by 10 mm compared to the normal chassis, and along with specific adjustment dampers, it also has its own spring and anti-roll tuning. For the MQB platform the DCC system was extended to add a version with the modular lightweight suspension (for models with less than 90 kW in power), which is being introduced for the first time in the new Golf. In the sensors area, certain parameters were perfected: designs of the wheel displacement sensors were adapted to the new MQB suspensions, and they were weight optimised. The body accelerometers were converted from three analogue lines to two digital lines; the DCC control unit was redesigned in its hardware configuration, components and layout. A new generation of processors operating at 180 MHz assures control with one-millisecond cycles.

New generation of air conditioners. Volkswagen has developed an entirely new air conditioner for the seventh generation Golf. The primary objective was to reduce noise and weight while increasing efficiency. In addition, the new system would be designed to be even more compact in its construction. These goals were achieved: based on studies in the area of fluid dynamic simulation were used to modify the cross sections of internal air conditioner components to reduce net pressure losses. This progress also led to a noise level reduction of up to 5 dB(A) and to a significantly reduced need for electrical blower power – and thereby a gain in efficiency. In addition, the use of a pulse-width modulated blower reduced current consumption by 4 Amperes on average. A distinct improvement in acoustics was also realised compared to the previous model by specific fluid dynamic studies of the recirculation air flaps. Partially reduced wall thicknesses of the polypropylene housing, a new fastening concept without complicated brackets and the use of higher performance and weight-optimised heat exchangers led to significantly lower weight of the new air conditioner.

The system package was improved by such measures as a new filter layout above the blower in the air intake channel; this makes the system 140 mm narrower here. This enabled a uniform layout of electrical system components between left-hand drive and right-hand drive vehicles, and it created more space in the foot area.

A high-performance heat exchanger as well as reduction of heat losses in the refrigerant cycle, demand-based use of electrical auxiliary heating and an innovative thermal management system has also improved heating performance. Compared to the previous model, the interior of the new Golf heats to a pleasantly warm temperature 30 percent faster.

In addition, the refrigerant cycle was completely redesigned for maximum efficiency gain, weight reduction and manufacturing optimisation. The refrigerant cycle consists of a highly efficient compressor and condenser as well as an internal heat exchanger. Design of the refrigerant lines was also perfected; one effect was a considerable weight savings. Last but not least, along with improvements to the system design, another benefit of the efficient refrigerant cycle is that it cools the interior significantly faster.

More intelligent climate control. The new Climatronic of the Golf regulates the interior temperature fully automatically via 2-zone temperature control (separate for driver and front passenger). The intensity of the climate control can be influenced by selecting a profile ('Gentle', 'Moderate', 'Intensive'). The fully automatic control unit operates with various sensors – a sun sensor, air quality sensor and new humidity sensor. The sun sensor detects the intensity and direction of solar radiation, and the system is controlled accordingly. The positive effects of the optional deluxe climate windscreen are considered in this control as well.

When information from the air quality sensor indicates that the concentration of nitrogen oxides or carbon monoxide in the outside air has exceeded a defined limit, then the recirculation flap of the Climatronic system closes. The addition of a humidity sensor offers the great advantage that for the first time it is also possible to control the heating function with recirculation mode. This results in significantly quicker heating of the interior without fogging of the windows.

Improved fuel economy by highly efficient air conditioning. The humidity sensor is also used to run the air conditioning compressor at a lower power level, as needed, thereby significantly reducing energy consumption in the hot season of the year. Here, the Climatronic automatically deactivates the compressor as soon as it is not needed to reach the desired temperature, or if there is no risk of window fogging and a preset limit for humidity is not exceeded in the interior. For the first time, air conditioning components that are relevant to fuel economy are then only activated as needed and controlled to optimise energy consumption in all operating modes. The interplay of all components of the new air conditioning system leads to considerable fuel savings compared to the previous model.

Deluxe climate windscreen. As a first in its class, an optional deluxe climate windscreen is being offered for the new Golf. This new windscreen combines the advantages of conventional wire heating with those of heat-insulating glass. Wires are no longer embedded in the glass, rather an extremely thin, electrically conductive layer is used that can be heated in the glass laminate. In the cold season of the year, this function prevents fogging of the window; it also accelerates defrosting. In the summer, the new windscreen results in less heating of the interior, because the extremely thin coating reflects a majority of the solar radiation. Along with an increase in thermal comfort, the environment also benefits, since the air conditioning does not need to supply as much cooling power due to the reduced heating. At the same time, this improves the fuel economy of the Golf.

Panoramic tilt/slide sunroof. With the exception of the Golf Estate, there has so far not been a Golf with a transparent panoramic sunroof. This is now changing with the debut of the new Golf. A transparent system was developed here, which utilises a maximum roof area, offers optimal ventilation and opening functions, does not impair the torsional rigidity of the car and has the visual effect of lengthening the windscreen. What is referred to as the light transparency area – the incident light in the closed state – was enlarged by 33 per cent compared to a normal tilt/slide sunroof. Incidentally, the tinted, heat-insulating glass reflects away 99 per cent of UV radiation, 92 per cent of incident heat radiation and 90 per cent of incident light.

Interesting: According to a study conducted by the Medical University of Siena, Italy, roof opening systems in a car contribute towards a feeling of general well-being. Improvement of the interior climate improves safety and comfort as well. In addition, a brighter, more spacious interior makes the entire vehicle more attractive together with optimal design integration of the roof system.

Completely new Golf engines with up to 23 per cent better fuel economy

105-PS TDI only consumes 3.8 litres of diesel; 140-PS TSI with ACT only consumes 4.7 litres of petrol

Golf BlueMotion delivers new best value in segment with 3.2 litres per 100 km fuel consumption

-consumption

Wolfsburg/Porto Cervo, October 2012. Volkswagen has developed two completely new generations of engines for the seventh generation Golf. All versions – without exception charged direct-injection engines – are equipped with a Stop/Start system (about 4 per cent improvement in fuel economy) and a battery regeneration mode (CO_2 reduction of around 3 per cent). The bundle of all measures reduced CO_2 emissions by up to 23 per cent. Two of the highlights: a 1.4 TSI with 103 kW / 140 PS and a 1.6 TDI with 81 kW / 110 PS. The 140-PS TSI is the first Golf engine to feature the optional automatic cylinder deactivation (ACT active cylinder management), and thanks to this new technology and the reduced overall weight of the new Volkswagen – while maintaining its top agility – it consumes just 4.7 l/100 km (equivalent to 109 g/km CO_2). At the same time, the 110-PS TDI in the new Golf BlueMotion sets standards with a combined fuel consumption of just 3.2 l/100 (85 g/km CO_2) as measured under standard NEDC conditions. The new Golf has either a 5-speed or 6-speed gearbox, depending on the engine. Most of the TSI and TDI engines may also be combined with an automatic dual-clutch gearbox (DSG).

Petrol engines. The new petrol engines (TSI of the EA211 engine series) produce 63 kW / 85 PS, 77 kW / 105 PS, 90 kW / 122 PS and 103 kW / 140 PS. The 140-PS version can be delivered with the innovative automatic cylinder deactivation, or ACT, as an option that reduces fuel consumption by up to 0.5 l/100 km.

Diesels. The new diesel engines (TDIs of the EA288 engine series) propel the Golf extremely efficiently. The power range of the high-tech diesels: 77 kW / 105 PS, 81 kW / 110 PS and 110 kW / 150 PS.

Driving profile selector. For the first time, a driving profile selector is being offered in the Golf; this is an instrument with which anticipatory drivers can realise an especially

efficient style of driving. A total of four programmes are available, and in conjunction with DCC (dynamic chassis control) five driving programmes: Eco, Sport, Normal, Individual and in combination with DCC the additional Comfort. In the Eco driving profile, the engine controller, air conditioning and other auxiliary units are controlled for optimal fuel economy. In addition, vehicles with DSG have an additional coasting function in Eco mode; when the driver releases the accelerator pedal – e.g. when slowing down to a traffic light or in route segments with descents – the DSG disengages and the engine idles. This enables optimal utilisation of the kinetic energy of the Golf.

Overview of petrol engines of the EA211 engine series

1.2 TSI with 63 kW/85 PS. The base engine of the Golf is no longer a naturally aspirated engine as in the previous model (1.4 MPI with 59 kW / 80 PS), rather it is a turbocharged, direct injection TSI engine producing 63 kW / 85 PS (4,300 to 5,300 rpm). The DIN fuel consumption of the new 1.2 TSI: 4.9 l/100 km (equivalent to 113 g/km CO_2). Turbocharging has boosted the torque at this power level compared to the old entry-level engine (1.4 MPI) from 132 to 160 Nm (over the range 1,400 to 3,500 rpm). And that is clearly experienced as a gain in agile performance. Nonetheless, the car's combined fuel economy with this base engine was reduced by 1.5 l/100 km! That represents a fuel savings of 23 percent, which around 17 percent of all Golf drivers will enjoy (forecast of share of buyers choosing the base engine).

An 85-PS TSI engine was also available as an option in the previous model; compared to this version, and with an identical power output, fuel consumption was reduced by 0.6 l/100 km. The new Golf 1.2 TSI has a top speed of 179 km/h and accelerates to 100 km/h in 11.9 seconds.

1.2 TSI with 77 kW/105 PS. At 105 PS, the new Golf attains a DIN fuel consumption value of 4.9 l/100 km (equivalent to 114 g/km CO_2). This represents a savings of 0.3 l/100 km compared to the previous model. The maximum power of this engine is available over engine speeds from 4,500 to 5,500 rpm; the TSI outputs its maximum torque of 175 Nm between 1,400 and 4,000 rpm. At this power level, the Golf 1.2 TSI has a top speed of 192 km/h, and it accelerates to 100 km/h in 10.2 seconds. As an alternative to the standard 6-speed manual gearbox, this engine can be ordered with a 7-speed DSG; in this case, fuel consumption is reduced to 4.8 l/100 km (112 g/km CO_2).

1.4 TSI with 90 kW/122 PS. At the next power level, the 1.4-Liter TSI with 122 PS (5,000 to 6,000 rpm) makes its appearance in sporty fashion. It enables a top speed of 203 km/h and a sprint from zero to 100 km/h in 9.3 seconds. Its maximum torque is an impressive 200 Nm (from 1,400 rpm). The Golf 1.4 TSI with 122 PS consumes just 5.2 l/100 km (equivalent to 120 g/km CO_2), which is 1.0 l/100 km less than in the previous model. A 7-speed DSG is available as an option here; it reduces fuel consumption by an additional 0.2 litre to 5.0 l/100 km (116 g/km CO_2).

1.4 TSI with 103 kW/140 PS. The agile 140-PS TSI of the Golf already meets the limits of the EU-6 emissions standard. The four-cylinder engine develops its maximum power between 4,500 and 6,000 rpm. It has a combined fuel consumption of 5.2 l/100 km (119 g/km CO_2); with the 7-speed dual clutch gearbox fuel consumption is reduced to 5.0 l/100 km (116 g/km CO_2). This engine will also be offered in a second version with a new technical feature – automatic cylinder deactivation (ACT). Thanks to this innovative technology, the Golf, which has a top speed of 212 km/h, attains a combined fuel consumption of just 4.7 l/100 km (equivalent to 109 g/km CO_2). The Golf 1.4 TSI also attains this value with the optional

7-speed DSG. The TSI offers a maximum torque of 250 Nm in the lower engine speed range from 1,500 rpm to 3,500 rpm and accelerates the Golf to 100 km/h in just 8.4 seconds.

Petrol engines of the EA211 engine series in technical detail

Genealogy of a new engine lineup: Underlying the development code EA211 is a new family of petrol engines. It is made up of both three-cylinder and four-cylinder engines. The engines of the EA211 series made their premiere at Volkswagen with the production launch of the up! as a three-cylinder MPI. Now the TSI (TSI: direct injection with turbocharging) sixteen-valve, four-cylinder engines of the EA211 series – at the power levels 63 kW / 85 PS and 77 kW / 105 PS (each 1.2 litre) as well as 90 kW / 122 PS and 103 kW / 140 PS (each 1.4 litre) – are also setting new standards in the framework of the Modular Transverse Matrix – and therefore in the new Golf – in terms of their energy efficiency, lightweight design and high torque performance. Fuel consumption values and CO_2 emissions of the EA211 engines were reduced by 8 to 10 per cent, in part due to reduced internal friction, lower weight and optimised thermal management; in conjunction with the innovative new cylinder deactivation system (ACT), the savings potential can be as much as 23 per cent.

New angle of inclination. The engines of the EA211 series are also characterised by a new mounting position. In the familiar petrol engines of the previous EA111 series, the ('hot') exhaust side was at the front, and the engines were mounted with a forward tilt. By rotating the cylinder head, generation of EA211 engines is now tilted towards the firewall (bulkhead between engine compartment and passenger compartment), just like the diesel engines. From now on, the petrol engines also share this with the diesel engines of the EA288 series: they are now also inclined towards the rear at an identical inclination angle of 12 degrees. A positive result is that Volkswagen can now standardise the exhaust line, driveshafts and gearbox mounting position.

Only the cylinder spacing was preserved. The EA211 is a complete redesign; only the cylinder spacing of 82 mm was adopted from Volkswagen's successful EA111 engine series. That the engine is also built in an especially compact way is reflected in its mounting length, which has been shortened by 50 mm. This is an advantage that passengers in the new Golf will experience directly in the form of an even more spacious interior, because it was possible to shift the front axle forward.

Aluminium block reduces weight by up to 16 kg. Thanks to an ultra-rigid crankcase made of die-cast aluminium, the new petrol engines are especially lightweight at 97 kg (1.2 TSI) and 104 kg (1.4 TSI) – on the 1.4 TSI, the weight advantage compared to the grey cast iron counterpart from the EA111 series is as much as 22 kg. This approach to lightweight design that is meticulously observed at Volkswagen extends down to the smallest of details: engine developers reduced the main bearing diameter of the crankshaft on the 1.4 TSI from 54 to 48 mm; the crankshaft itself was lightened by 20 per cent, while the weight of the connecting rods was reduced by an impressive 30 per cent. The rod bearing pins are bored hollow, and the aluminium pistons (now with flat piston crowns) have now also been weight optimised.

Exhaust manifold integrated in cylinder head. By fully integrating the exhaust manifold in the cylinder head, the engine heats up quickly from a cold start, while simultaneously supplying ample heat to the car's climate control system to warm up the interior. At high loads, on the other hand, the exhaust gas is more effectively cooled by the coolant, which reduces fuel consumption by up to 20 per cent. Another key topic is what is known as thermal management. Volkswagen engineers designed the EA211 with a dual-loop cooling system. The base engine is cooled by a high-temperature loop with a mechanically driven coolant pump, while a low-temperature loop, powered by an electric pump, circulates coolant to the intercooler and turbocharger housing as needed. Passenger compartment

heating comes from the cylinder head circulation loop, so that it warms up quickly, like the engine.

Small turbocharger, big effects. By means of innovative engineering of the exhaust manifold, Volkswagen was able to use just a very narrow single-scroll compressor in turbocharger selection. The results: this reduced the weight of the cylinder head turbocharger component group. On the EA211, the intercooler is integrated in the induction pipe which is made of injection-moulded plastic. The advantage: significantly accelerated pressure build-up, which leads to very dynamic performance in downsized engines that have smaller displacements.

Renaissance of the toothed belt in valve actuation. Volkswagen has once again significantly reduced internal friction in its new generation of engines in the Golf. Take the example of overhead camshafts (DOHC): the camshafts are not driven by chain here, rather by a single-stage, low-friction toothed belt design with a 20 mm wide belt and load-reducing profiled belt wheels. Thanks to its high-end material specification, this toothed belt's service life reliably spans the entire life of the vehicle. Actuation of the valve drive via roller cam followers and an anti-friction bearing for the highly loaded first camshaft bearing also lead to reduced friction resistances. To ensure that the engine takes up as little mounting space as possible, ancillary components such as the water pump, air conditioning compressor and alternator are screwed directly to the engine and the oil sump without additional brackets, and they are driven by a single-track toothed belt with a permanent tension roller.

Variable camshaft for more torque. To reduce emissions and fuel consumption further, and to improve torque in the lower rev range, the intake camshaft on all EA211 engines can be varied over a range of 50 degrees crankshaft angle – on the 1.4 TSI with 103 kW / 140 PS, the exhaust camshaft is variable as well. It sets the desired spread of control times and thereby allows even more spontaneous response from low revs; at the same time, torque is improved at high engine speeds.

Five-hole injection nozzles spray at up to 200 bar. The maximum injection pressure of the new TSI versions (direct injection engines) was increased to 200 bar; state-of-the-art five-hole injection nozzles deliver up to three individual injections to each of the cylinders via a stainless steel distributor bar – extremely precisely. In designing the combustion chamber, Volkswagen also paid particular attention to achieving minimal wetting of the combustion chamber walls with fuel and to optimised flame propagation.

Active cylinder management (ACT) in the 1.4 TS

Two of the four cylinders take a rest. Volkswagen is the world's first carmaker to implement active cylinder management (ACT) for the TSI four-cylinder – a fuel saving technology that was previously the preserve of large eight or 12 cylinder engines. Active cylinder management is now making its debut in the 1.4 TSI with 103 kW / 140 PS of power. Temporarily deactivating the second and third cylinders can save over 0.5 litres of fuel per 100 km, depending on driving style.

Active up to 4,000 rpm and 85 Nm. ACT is active over an engine speed range between 1,400 and 4,000 rpm and torques of up to 85 Nm. This is a broad characteristic map, which covers 70 per cent of all driving states in the EU driving cycle! If the driver presses the accelerator pedal hard, cylinders 2 and 3 begin to work again, without a noticeable transition. The high efficiency of the system does not have any negative effects on smooth running: even with two cylinders the excellently balanced 1.4 TSI runs just as quietly and with low vibration as with four active combustion chambers. All mechanical switchover processes

take place within one camshaft rotation; depending on engine speed this takes just 13 to 36 milliseconds. Accompanying interventions in ignition and throttle valve processes smooth the transitions.

ACT components weigh just 3 kg. Altogether, the components of active cylinder management weigh just 3 kg. Their actuators, the camshafts and their bearing frames are integrated in the cylinder head; two low-friction bearings reduce shaft friction. Important to know: only with the TSI concept – petrol direct injection plus turbocharging – is cylinder deactivation even conceivable in the form being implemented today. In naturally aspirated direct-injection systems there would be complications in fuel induction, combustion and emissions control.

Overview of the new EA288 series diesel engines

1.6 TDI with 77 kW/105 PS. The engine offering entry to the world of the Golf TDI consumes 3.8 l/100 km (equivalent to 99 g/km CO_2). Its maximum power is reached between 3,000 and 4,000 rpm, and its maximum torque of 250 Nm is available between 1,500 and 2,750 rpm. This TDI accelerates the Golf to 100 km/h in 10.7 seconds and reaches a top speed of 192 km/h. As an option, the Golf 1.6 TDI at this power level can be paired with a 7-speed dual-clutch gearbox. In this case, combined fuel consumption is 3.9 l/100 km (equivalent to 102 g/km CO_2).

1.6 TDI with 81 kW/110 PS. The Golf BlueMotion achieves a combined fuel consumption of 3.2 l/100 km (equivalent to 85 g/km CO_2) as measured under standard NEDC conditions; this makes it the most fuel-efficient Golf ever. Its maximum torque of 250 Nm is available from 1,500 to 2,750 rpm. The new Golf BlueMotion has a top speed of 202 km/h and if necessary can accelerate to 100 km/h in 10.5 seconds. The Golf BlueMotion is exclusively offered with a 5-speed manual gearbox.

2.0 TDI with 110 kW/150 PS. A combined fuel consumption of just 4.1 l/100 km (106 g/km CO_2) is an excellent value for an engine with 150 PS of power. The 2.0-litre TDI also has two balancer shafts and so it runs very smoothly. It develops its maximum power between 3,500 and 4,000 rpm; from a low 1,750 rpm the TDI makes its maximum torque of 320 Nm available (up to 3,000 rpm). The Golf 2.0 TDI has a top speed of 216 km/h and accelerates to 100 km/h in 8.6 seconds. This Golf may also be ordered with an optional dual-clutch gearbox (6-speed DSG). In this case, the car's combined fuel consumption is 4.4 l/100 km (equivalent to 117 g/km CO_2).

Technical details of the new EA288 series diesel engines

New level of sustainability. In the EA288 engine series, Volkswagen is taking its TDI technology – which has been continually perfected over the years – to a new level of sustainability. Consider the Golf 2.0 TDI with 110 kW / 150 PS: Compared to the previous engine (EU-5 engine of the EA189 series with 103 kW / 140 PS), which was already extremely fuel efficient, fuel consumption was further reduced by 0.2 litre, and CO_2 emissions were reduced by 8 g/km.

Internal engine modifications to reduce emissions. Just like the new petrol engines (EA211), the only dimension of the Golf's new four-cylinder diesels that is the same as that of the previous model is the cylinder spacing. Many components were designed to be modular thanks to the new modular diesel component system (MDB). They include emissions-relevant components such as the fuel injection system, turbocharger and intercooler within the induction manifold module. In addition, a complex exhaust gas recirculation system is used (with a cooled low-pressure AGR). Also new on all Golf TDI engines is the layout of emissions control components to locate them nearer to the engine. To fulfil various emissi-

ons standards worldwide, the emissions control components oxidation catalytic converter, diesel particulate filter and NOx storage catalytic converter are implemented in the Golf. Various other design modifications optimise fuel economy and comfort significantly as well.

Low-friction bearings and oil pump with volumentric flow control reduce friction. Along with reducing hazardous emissions, Volkswagen has tuned all sub-assemblies of the new TDI for minimal internal friction. These actions include piston rings with less pre-tension and the use of low-friction bearings for the camshaft (drive-side) and – in the top version – for the two balancer shafts. In the oil circulation loop, energy usage was optimised by an oil pump with volumetric flow control.

Quickly up to temperature. During the warm-up phase, an innovative thermal management system utilises separate cooling circulation loops for the cylinder head and the cylinder crankcase as well as a deactivatable water pump. This heats the TDI engines of the new Golf to their operating temperatures considerably faster. A pleasant side effect: the interior also gets warmer quicker in the winter. Another independently controlled cooling loop enables on-demand control of charge air temperature with additional emissions control benefits.

Balancer shafts for the 2.0 TDI. The new diesels are not only very low in emissions, fuel-efficient and torque strong, they are also very smooth-running and comfortable. Consider the 2.0 TDI with 150 PS: two low-friction bearings are used in its balancer shafts. They eliminate free inertial forces that occur in any piston engine system.

Dual-clutch gearboxes (DSG)

6- and 7-speed DSG. Most engines of the new Golf may be paired with a dual-clutch gearbox (DSG). It is either a 6-speed or 7-speed DSG, depending on maximum engine torque. Both DSG versions are characterised by top-level fuel-efficiency and shifting dynamics. Besides the number of forward gears, other technical aspects differentiating the DSG versions include the clutch type. While two dry clutches are used in the seven-speed DSG, the six-speed DSG has a dual clutch that runs in an oil bath. More than any other form of automatic transmission, these dual-clutch gearboxes also have the potential to reduce fuel consumption and therefore emissions.

Golf will be offered with modular lightweight suspension for first time

New, very lightweight rear suspension for all Golf cars with less than 90 kW

Comfort and agility of the Golf further improved

Wolfsburg /Porto Cervo, October 2012. The running gear in the Golf is the benchmark in the compact class. By systematically optimising many of its components, e.g. by bionic design – structures designed after examples in nature –, the objective was to extend this position with the seventh generation of the best-seller. Based on the new Modular Transverse Matrix, specific proven components were further advanced to perfect ride and comfort properties. At the same time, weight was lowered in many areas of the running gear – and this brings advantages in terms of fuel economy and ride comfort. To fully exploit the greatest possible weight reduction, a new rear suspension was developed for the engine versions with less than 90 kW / 122 PS: the modular lightweight design suspension. It weighs just 38 kg. For the more powerful engine versions, the further developed modular performance suspension was used (weight: 49 kg). In front, Volkswagen has also integrated a MacPherson suspension in the new Golf as well.

MacPherson-type front suspension

As mentioned, a MacPherson front suspension (spring struts) with lower wishbones that were newly developed as well as its track-stabilising scrub radius provides for optimal handling and steering properties in the Golf as well as balanced vibration behaviour. All components were reworked for improved functionality, weight and costs. The result, despite not using aluminium components, was a weight savings of 1.6 kg. This was made possible, for example, by the use of high-strength steel in the transverse links and an innovative bionic design approach to the pivot bearings. A subframe is centrally positioned on the front axle; its frame – designed for maximum transverse rigidity – handles loads from the engine mounts and steering as well as loads of the front suspension components.

The now universally employed tubular anti-roll bar has a spring rate that has been adapted to the requirements of different running gear layouts. The rubber bearings are vulcanised

directly onto the painted anti-roll tube; this assures optimal acoustic properties. For the combination with the 16-inch and 17-inch brakes, a new aluminium pivot bearing was also developed. The use of aluminium and the bionic design of this pivot bearing enabled a weight reduction of 2.8 kg.

Modular lightweight suspension

The new modular lightweight suspension consists of a transverse profile that is open at the bottom, into which an insert plate is welded at the outer ends. Different torsion rates for different versions are attained by different lengths of the insert plates. This yields a considerable weight advantage compared to a welded-in tubular anti-roll bar. The use of a transverse profile that is open at the bottom in the layout also enables optimal roll-steer behaviour and high transverse rigidity. By using high-strength steels and innovative design methods, Volkswagen succeeded in significantly increasing rigidities compared to previous suspensions of this construction type. Despite this, its weight was reduced. Compared to the modular performance suspension of the Golf versions with more engine power, a weight savings of 11 kg is achieved here. The modular lightweight suspension is an optimal match for the smaller engines; in combination with the McPherson front suspension it delivers excellent comfort and handling properties.

Modular performance suspension

The rear suspension of the seventh generation Golf was further developed from the perspectives of improved kinematics, acoustics, weight situation and modularity. However, nothing has changed with regard to its fundamental approach of consistently separating longitudinal and transverse rigidities. The low longitudinal rigidity has been preserved by the soft axle control of the trailing link; this was a necessary precondition for further improving ride comfort.

Furthermore, Volkswagen successfully improved the transverse rigidity of the modular performance suspension, which is important for steering behaviour, by a new tie rod bearing tuning. Tracking and camber values are individually tuned by excentric screws on the spring link and at the upper transverse link according to requirement for each vehicle type. Key design changes to the rear suspension are the connections of the tubular anti-roll bar and the suspension damper, which are now made at the spring link. This reduces forces within the suspension; there are also significant package advantages. In addition, the suspension was made 4.0 kg or 8 per cent lighter in weight by structural optimisations of many components and the use of high-strength steels.

Over 29 million sales of previous Golf models

Global best seller: the Golf has been the world’s best-selling car since 1974

Style icons: Golf Mk1 and Golf Mk4 define the model to this day

generation 7

Wolfsburg/Porto Cervo, October 2012. Officially there has never been any numbering by Volkswagen of the Golf generations, so no Golf Mk1, Mk2, Mk3, Mk4, Mk5, Mk6 or Mk7. With now seven generations of the car it is, however, easier to place them historically if that numbering system now 'officially' enters into the Golf's history via this press kit. The fact is that with exactly 29.13 million units sold since 1974 – as of 31st July 2012 –, the Volkswagen Golf, including its derivatives such as the Cabriolet and the Estate, is one of the most successful motorcars ever sold in the world.

Golf I – 1974 to 1983

The first full-production Golf rolled off the production line in Wolfsburg in March 1974 and was in Volkswagen dealerships that May. In those showrooms, where for decades the Beetle and thus rear-mounted engines and rear-wheel drive had dominated the scene, a new era had now dawned: that of the transversely mounted front engine and front-wheel drive. This trend had been heralded a short time earlier by the Scirocco and – as the first Volkswagen front-wheel drive car, based on the K70 taken over from NSU – the Passat, introduced in 1973. With the launch of the Golf, the highest volume vehicle category had now also been switched over to the new technology.

As the successor to the legendary Beetle, of which over 21.5 million units were made, the Golf Mk1 designed by Giorgio Giugiaro had to live up to the great expectations that it would carry on the success story of what until then was the world's most successful car. In the spring of 1974, nobody could really be sure that this would indeed be achieved. However, the modern and reliable drive system, the spacious internal layout with a tailgate and fold-down rear seat, and ultimately the design as well, won over the market to such an extent that production of the one-millionth Golf was already being celebrated in October 1976.

At that time, Volkswagen wrote this about the new car: “The Golf offers maximum luggage space and safety. It is laid out uncompromisingly for practical use. The low beltline provides clarity, the sloping bonnet allows a clear view of the road right up to just in front of the car and the low rear window makes reversing easy.” And those comments still ring true today. Like every Golf that would appear after it, the first generation too reflected the progress and automotive trends of its era. For example, in launching the first Golf GTI (in 1976) Volkswagen heralded the introduction of greater dynamism in this class, while the Golf D (naturally aspirated diesel engine, 1976) and the later Golf GTD (turbodiesel, 1982) marked the breakthrough for diesel cars in the compact segment. In 1979, with the Golf Cabriolet – at times the world’s best-selling open-top car – Volkswagen brought a breath of fresh air into a vehicle category that by that time had long been simply called the ‘Golf class’. 6.72 million units of the first generation Golf, including all derivatives such as the Cabriolet and the Jetta (at that time based on the same body), were sold across every continent of the globe – the Golf had proved itself a worthy successor to the Beetle.

Golf II – 1983 to 1991

It was the second generation Golf that was the Volkswagen in which the generation of baby-boomers, now around 50 years of age, learned to drive: While its predecessor had already become a favourite of all driving instructors and learner drivers, the second Golf had now become firmly established in their minds as their permanent number one choice. As of August 1983, they no longer sat quite so close to each other, as that year’s press kit pointed out: “The wheelbase is now 75 mm longer, while the track width at the front has been increased by 23 mm and at the rear by 50 mm. Total length has increased by 170 mm (now 3.99 m) and the width by 55 mm (now 1.42 m)… The level of comfort, as measured by the distance from the accelerator pedal and rear seatback, has increased by 37 mm to 1,837 mm, while elbow room in the front is now 92 mm wider and in the rear seating area it has increased by 112 mm. On the four-door model the increase is even 120 mm.”

It was the Golf that introduced the regulated catalytic converter (1984), anti-lock braking system (ABS, 1986) and power-steering to the Golf class and which offered an all-wheel drive system for the first time (Syncro, 1986). And as far back as 1989 – some 23 years ago – Volkswagen was already unveiling a prototype of this Golf with an electric motor and another with a hybrid drive system. In June 1988, 14 years after its debut, the Golf had also surpassed the magical production milestone of 10 million units. In 1991, after 6.41 million of its kind had been sold, the Golf Mk2 was retired to make room for the successor.

Golf Mk3 – 1991 to 1997

With the launch of the third generation of the Golf in August 1991, Volkswagen heralded a new era of safety. The Golf Mk3 was the first of the series to have front airbags, starting in 1992, while major advances in the area of car body construction also resulted in significantly improved crash safety. Looking back, it can be said that with this Golf Volkswagen truly democratised passive safety, as the improved protection benefited millions of car drivers all over the globe.

However, there are also numerous other Golf milestones associated with the Mk3. Many new features made their debuts in this new Golf: the first six cylinder engine (VR6), the legendary Ecomatic transmission, cruise control, the first oxidation catalytic converter for diesel engines (1991), the first direct injection diesel engines (TDI in 1993 and SDI in 1995) and the first side airbags (1996). Also, ABS became a standard feature on all Golf models in September 1996. In 1993, Volkswagen had also introduced a new cabriolet based on the Golf Mk3, a new all-wheel drive model (Syncro II) and the first Golf Variant (an estate).

A year later, in May 1994, Volkswagen celebrated production of the 15-millionth Golf. In 1997, after production of 4.96 million of the cars, the third generation came to the end of the line.

Golf Mk4 – 1997 to 2003

Under the direction of Harmut Warkuß, then Head of Design at Volkswagen (Group), the Mk4 crystallised the clear, precise design that lived up to the history of the Volkswagen brand more than ever before while setting its course to the future. It is in this era that the Volkswagen design DNA has its origins. Today, design experts regard the Golf Mk4 as a style icon and a pioneering step for the model – not least because despite all its clarity and characteristic C-pillar design it still forged a link back to the Golf Mk1 of 1974.

However, the Golf Mk4 was not only pioneering in terms of its looks, it was groundbreaking in its engineering as well. With this car Volkswagen achieved a totally new standard of quality in this market segment and thus became the first manufacturer to overcome vehicle class boundaries. With the debut of ESC (in 1998) and the brake assistant system, the car continued to democratise safety. Also in 1998, Volkswagen unveiled the first all-wheel drive Golf with a Haldex clutch – the Golf 4MOTION. One year later, ESC became a standard feature, initially in Germany. In the same year, the first Golf with six-speed transmission made its debut. There then followed in 2001 the Golf GTI 132 kW (launched to mark the GTI's 25th anniversary and now already sought-after as a classic) and in 2002 the first Golf with petrol direct injection (FSI) and the debut of head (window) airbags fitted as standard. Also in 2002, Volkswagen launched what at the time was the sportiest Golf ever: the R32, with a top speed of 250 km/h. It was this top model that in 2003 was the first ever to be available with the revolutionarily fast and fuel-efficient dual-clutch gearbox (DSG) – the automatic transmission for a new era. In the same year, after production of 4.92 million units, the Golf Mk4 – the first fully galvanised Golf – and the first available with a navigation system and xenon headlights – made way on the production lines for the Golf Mk5.

Golf Mk5 – 2003 to 2008

This was the Golf that boasted levels of comfort and dynamic performance that left many a competitor in its class way behind. The same went for the car's quality. One parameter that was indicative of the strength of the laser-welded bodywork was the 35 per cent increase in torsion rigidity of the Golf Mk5, which made its debut in 2003. The Golf was now also available for the first time with optional side airbags in the rear seating area – together with the six standard airbags (front, side front and head airbags) there were thus eight protective air buffers on board.

In terms of comfort as well as dynamic performance and handling, the Golf Mk5 scored in numerous areas, including: its new four-link rear suspension and new seven-speed DSG, bi-xenon headlights, rain sensor and panoramic sliding sunroof, plus the debut of the first turbocharged direct injection petrol engine in the Golf GTI (in 2004) and the world's first twincharger (in the 2006 TSI), combining turbo and superchargers. At the same time, new vehicle body versions also made the Golf attractive to a wider range of drivers. The Golf Plus was launched in 2006, and the year 2007 saw the launches of the CrossGolf, a new Estate, and the Golf BlueMotion, which set a new benchmark with its combined fuel consumption of just 4.5 l/100 km. By the time the Golf Mk6 was unveiled in 2008, over 3.27 million units had been produced of the Golf Mk5 in all of its versions.

Golf Mk6 – 2008 to 2012

In just four years, a further 2.85 million Golf cars had been produced by the end of July 2012, based on the sixth generation of the car launched in 2008. And once again safety made great advances too: the car body, again laser-welded, was so rugged that it passed the EuroNCAP crash test with flying colours, gaining the maximum five stars. There was now also a further airbag fitted as standard: the driver's knee airbag.

In terms of its quality, the Golf Mk6's interior in particular ranked as ahead of its time. Meanwhile, more TSI engines and a transition among the turbodiesel engines (TDI) from unit injection to the common rail system produced greater dynamic performance and lower fuel consumption. A top performer was the second Golf BlueMotion with a combined fuel consumption of just 3.8 l/100 km, equivalent to 99 g/km CO_2. New assistance systems – such as Light Assist automatic main beam management, Park Assist, hill start assistant and technologies such as DCC dynamic chassis control – made the 'World Car of the Year 2009' the most advanced Golf to date. Also available were features such as the Stop/Start system and battery regeneration mode, dynamic cornering lights and LED rear light clusters. Even if the Golf Mk6 has now been topped by the Mk7, its outstanding product features and superb design will ensure that the sixth generation Golf – as a used car too – will continue to be regarded as one of the most successful cars on the market for many a year to come.

Der Golf.
THE DRIVE
Das Auto.

Key aspects

in alphabetical order

ASSISTANCE AND VEHICLE DYNAMICS SYSTEMS:
DCC dynamic chassis control, ACC adaptive cruise control plus surroundings monitoring system Front Assist with City Emergency brake function, Dynamic Light Assist dynamic main beam control; Electronic Stability Control (ESC / including anti-lock brake system, brake assistant, traction control, XDS electronic differential lock, engine drag torque control, countersteering support and trailer stabilisation); driver profile selection; Light Assist main beam control; cruise control system including speed limiter; fatigue detection; multicollision brake; ParkPilot; Park Assist park steering assistant; proactive occupant protection system; tyre pressure monitoring indicator; Rear Assist; Lane Assist lane-keeping assistant; traffic sign recognition.

AUTOMATIC GEARBOX:
6-speed and 7-speed DSG.

CARGO CAPACITY:
380 litres to 1,270 litres

C_D VALUE:
0.27 (Golf BlueMotion).

CHARACTER:
The icon!

COLOURS:
Standard colour “Urano Grey”;
optional colours “Pure White”, “Tornado Red”, “Black”;
metallic paints “Night Blue”, “Pacific Blue”, “Sunset Red” and “Tungsten Silver”;
the pearl effect tone “Deep Black”;
the mother of pearl effect colour “Oryx White”.

DESIGN:
Walter de Silva (Group), Klaus Bischoff (Brand).

DIMENSIONS:
4,255 mm long,
1,799 mm wide (without door mirrors),
2,027 mm wide (with door mirrors),
1,452 mm tall, 2,637 mm wheelbase.

DRIVE:
Front-wheel drive.

ENGINES – DIESEL:
1.6 TDI with 77 kW/105 PS,
1.6 TDI with 81 kW/110 PS and
2.0 TDI with 110 kW/150 PS.

ENGINES – PETROL:
1.2 TSI with 63 kW/85 PS,
1.2 TSI with 77 kW/105 PS,
1.4 TSI with 90 kW/122 PS and
1.4 TSI with 103 kW/140 PS.

EQUIPMENT LINES:
Trendline, Comfortline, Highline.

FUEL TANK:
50 litres; theoretical driving range up to 1,562 km, depending on engine.

INFOTAINMENT:
“Composition Touch” radio (5-inch touchscreen),
“Composition Colour” radio (5-inch touchscreen),
“Composition Media” radio (5.8-inch touchscreen),
“Composition Media” radio with “Discover Media” navigation function (5.8-inch touchscreen),
“Discover Pro” radio-navigation system (8-inch touchscreen).

MARKET LAUNCH, EUROPE:
Starting 10 November

PRICES (GERMANY):
Golf 1.2 TSI with 63 kW / 85 PS – from 16,975 euros;
Golf 1.4 TSI with 103 kW / 140 PS – from 22,525 euros;
Golf 1.6 TDI with 77 kW / 105 PS – from 20,725 euros;
Golf 2.0 TDI with 110 kW / 150 PS – from 25,275 euros.

PRODUCTION SITE:
Wolfsburg plant and Mosel plant (Zwickau).

RUNNING GEAR:
MacPherson-type front suspension; modular lightweight rear suspension (in versions under 90 kW) or modular performance rear suspension (in versions from 90 kW).

STANDARD GEARBOX:
5-speed and 6-speed manual gearbox.

START OF ADVANCE SALES, GERMANY:
5 September.

WHEELS:
Standard on Trendline: 15-inch steel wheels with full wheel covers; standard on Comfortline: 16-inch “Dover” alloy wheels; standard on Highline: 17-inch “Dijon” alloy wheels; optional: 16-inch “Toronto” and “Perth” alloy wheels, 17-inch “Geneva” and “Madrid” alloy wheels, 18-inch “Durban” alloy wheels including sport chassis.

Technical data (of versions at market launch)

Golf		63 kW (85 PS)
Engine, electrics		
Type of engine		4-cyl. petrol engine TSI BMT
Effective displacement	cm^3	1,197
Valves per cylinder, drive		2, parallel/indirect, roller rocker finger
Mixture formation		Direct petrol injection
Type of charging and pressure		Turbocharger/charge pressure
Power output	kW (PS) at rpm	63 (85) 4,300 - 5,300
Max. torque	Nm at rpm	160/1,400 - 3,500
Performance (at curb weight + 200 kg)		
Acceleration 0–80/100 km/h	s	7.6/11.9
Top speed	km/h	179
Fuel consumption (99/100/EC)		
Fuel type		Premium 95 RON
Combined cycle	l/100km	4.9
Emissions (CO_2)	g/km	113
Efficiency label		B
Exhaust emissions classification		Euro 5
Power transmission		
Type of clutch		Single-plate dry clutch, dual-mass flywheel
Gearbox		Five-speed manual gearbox
Exterior dimensions		
Number of doors		2
Length/width/height	mm	4,255/1,790/1,452
Wheelbase	mm	2,637
Track, front/rear	mm	1,549/1,520
Luggage compartment		
Length, rear seat raised/folded down	mm	839/1,558
Volume by VDA measurement: rear seat raised/folded down	l	380 -1,270
Weights		
Unladen weight	kg	1,205
Permitted gross weight	kg	1,720
Payload	kg	590
Perm. axle load, front/rear	kg	910/860
Perm. trailer load up to 12%, braked/unbraked	kg	1,100/600
Capacities		
Fuel tank	l	50

Golf		103 kW (140 PS)
Engine, electrics		
Type of engine		4-cyl. petrol engine TSI BMT
Effective displacement	cm^3	1,395
Valves per cylinder, drive		4 at an angle/indirect, roller rocker finger
Mixture formation		Direct electronic petrol injection, 200 bar maximum injection pressure
Type of charging and pressure		Exhaust turbocharger with single scroll turbine
Power output	kW (PS) at rpm	103 (140) 4,500 - 6,000
Max. torque	Nm at rpm	250/1,500 - 3,500
Performance (at curb weight + 200 kg)		
Acceleration 0–80/100 km/h	s	5.9/8.4
Top speed	km/h	212
Fuel consumption (99/100/EC)		
Fuel type		Premium 95 RON
Combined cycle (ACT)	l/100km	5.2 (4,7)
Emissions (CO_2) (ACT)	g/km	119 (109)
Efficiency label		B
Exhaust emissions classification		Euro 5
Power transmission		
Type of clutch		Single-plate dry clutch, dual-mass flywheel
Gearbox		Six-speed manual gearbox
Exterior dimensions		
Number of doors		2
Length/width/height	mm	4,255/1,790/1,452
Wheelbase	mm	2,637
Track, front/rear	mm	1,549/1,520
Luggage compartment		
Length, rear seat raised/folded down	mm	839/1,558
Volume by VDA measurement: rear seat raised/folded down	l	380 -1,270
Weights		
Unladen weight	kg	1,268
Permitted gross weight	kg	1,780
Payload	kg	585
Perm. axle load, front/rear	kg	940/890
Perm. trailer load up to 12%, braked/unbraked	kg	1,500/630
Capacities		
Fuel tank	l	50

Golf		103 kW (140 PS)
Engine, electrics		
Type of engine		4-cyl. petrol engine TSI BMT
Effective displacement	cm^3	1,395
Valves per cylinder, drive		4 at an angle/indirect, roller rocker finger
Mixture formation		Direct electronic petrol injection, 200 bar maximum injection pressure
Type of charging and pressure		Exhaust turbocharger with single scroll turbine
Power output	kW (PS) at rpm	103 (140) 4,500 - 6,000
Max. torque	Nm at rpm	250/1,500 - 3,500
Performance (at curb weight + 200 kg)		
Acceleration 0–80/100 km/h	s	5.9/8.4
Top speed	km/h	212
Fuel consumption (99/100/EC)		
Fuel type		Premium 95 RON
Combined cycle (ACT)	l/100km	5.0 (4,7)
Emissions (CO_2) (ACT)	g/km	116 (109)
Efficiency label		B
Exhaust emissions classification		Euro 5
Power transmission		
Type of clutch		Two electrohydraulically operated dry clutches
Gearbox		Seven-speed direct shift gearbox (DSG)
Exterior dimensions		
Number of doors		2
Length/width/height	mm	4,255/1,790/1,452
Wheelbase	mm	2,637
Track, front/rear	mm	1,549/1,520
Luggage compartment		
Length, rear seat raised/folded down	mm	839/1,558
Volume by VDA measurement: rear seat raised/folded down	l	380 -1,270
Weights		
Unladen weight	kg	1,288
Permitted gross weight	kg	1,800
Payload	kg	587
Perm. axle load, front/rear	kg	960/890
Perm. trailer load up to 12%, braked/unbraked	kg	1,500/640
Capacities		
Fuel tank	l	50

Golf		77 kW (105 PS)
Engine, electrics		
Type of engine		4-cyl. 16V diesel engine TDI CR BlueMotion Technology
Effective displacement	cm^3	1,598
Valves per cylinder, drive		4 at an angle/indirect, roller rocker finger
Mixture formation		Diesel direct injection, common rail
Type of charging and pressure		Turbocharger/charge pressure
Power output	kW (PS) at rpm	77 (105) 3,000 - 4,000
Max. torque	Nm at rpm	250/1,500 - 2,750
Performance (at curb weight + 200 kg)		
Acceleration 0–80/100 km/h	s	7.3/10.7
Top speed	km/h	192
Fuel consumption (99/100/EC)		
Fuel type		Diesel min. 51 CN
Combined cycle	l/100km	3.8
Emissions (CO_2)	g/km	99
Efficiency label		A
Exhaust emissions classification		Euro 5
Power transmission		
Type of clutch		Single-plate dry clutch, dual-mass flywheel
Gearbox		Five-speed manual gearbox
Exterior dimensions		
Number of doors		2
Length/width/height	mm	4,255/1,790/1,452
Wheelbase	mm	2,637
Track, front/rear	mm	1,549/1,520
Luggage compartment		
Length, rear seat raised/folded down	mm	839/1,558
Volume by VDA measurement: rear seat raised/folded down	l	380 -1,270
Weights		
Unladen weight	kg	1,295
Permitted gross weight	kg	1,800
Payload	kg	580
Perm. axle load, front/rear	kg	1,010/840
Perm. trailer load up to 12%, braked/unbraked	kg	1,500/640
Capacities		
Fuel tank	l	50

Golf		77 kW (105 PS)
Engine, electrics		
Type of engine		4-cyl. 16V diesel engine TDI CR BlueMotion Technology
Effective displacement	cm^3	1,598
Valves per cylinder, drive		4 at an angle/indirect, roller rocker finger
Mixture formation		Diesel direct injection, common rail
Type of charging and pressure		Turbocharger/charge pressure
Power output	kW (PS) at rpm	77 (105) 3,000 - 4,000
Max. torque	Nm at rpm	250/1,500 - 2,750
Performance (at curb weight + 200 kg)		
Acceleration 0–80/100 km/h	s	7.3/10.7
Top speed	km/h	192
Fuel consumption (99/100/EC)		
Fuel type		Diesel min. 51 CN
Combined cycle	l/100km	3.9
Emissions (CO_2)	g/km	102
Efficiency label		A
Exhaust emissions classification		Euro 5
Power transmission		
Type of clutch		Two electrohydraulically operated dry clutches
Gearbox		Seven-speed direct shift gearbox (DSG)
Exterior dimensions		
Number of doors		2
Length/width/height	mm	4,255/1,790/1,452
Wheelbase	mm	2,637
Track, front/rear	mm	1,549/1,520
Luggage compartment		
Length, rear seat raised/folded down	mm	839/1,558
Volume by VDA measurement: rear seat raised/folded down	l	380 -1,270
Weights		
Unladen weight	kg	1,313
Permitted gross weight	kg	1,810
Payload	kg	572
Perm. axle load, front/rear	kg	1,020/840
Perm. trailer load up to 12%, braked/unbraked	kg	1,500/650
Capacities		
Fuel tank	l	50

Golf		110 kW (150 PS)
Engine, electrics		
Type of engine		4-cyl. 16V diesel engine TDI CR BlueMotion Technology
Effective displacement	cm^3	1,968
Valves per cylinder, drive		4 at an angle/indirect, roller rocker finger
Mixture formation		Diesel direct injection, common rail
Type of charging and pressure		Turbocharger/charge pressure
Power output	kW (PS) at rpm	110 (150) 3,500 - 4,000
Max. torque	Nm at rpm	320/1,750 - 3,000
Performance (at curb weight + 200 kg)		
Acceleration 0–80/100 km/h	s	6.2/8.6
Top speed	km/h	216
Fuel consumption (99/100/EC)		
Fuel type		Diesel min. 51 CN
Combined cycle	l/100km	4.1
Emissions (CO_2)	g/km	106
Efficiency label		A
Exhaust emissions classification		Euro 5
Power transmission		
Type of clutch		Single-plate dry clutch, dual-mass flywheel
Gearbox		Six-speed manual gearbox
Exterior dimensions		
Number of doors		2
Length/width/height	mm	4,255/1,790/1,452
Wheelbase	mm	2,637
Track, front/rear	mm	1,549/1,520
Luggage compartment		
Length, rear seat raised/folded down	mm	839/1,558
Volume by VDA measurement: rear seat raised/folded down	l	380 -1,270
Weights		
Unladen weight	kg	1,354
Permitted gross weight	kg	1,860
Payload	kg	581
Perm. axle load, front/rear	kg	1,030/880
Perm. trailer load up to 12%, braked/unbraked	kg	1,600/670
Capacities		
Fuel tank	l	50

Golf		110 kW (150 PS)
Engine, electrics		
Type of engine		4-cyl. 16V diesel engine TDI CR BlueMotion Technology
Effective displacement	cm^3	1,968
Valves per cylinder, drive		4 at an angle/indirect, roller rocker finger
Mixture formation		Diesel direct injection, common rail
Type of charging and pressure		Turbocharger/charge pressure
Power output	kW (PS) at rpm	110 (150) 3,500 - 4,000
Max. torque	Nm at rpm	320/1,750 - 3,000
Performance (at curb weight + 200 kg)		
Acceleration 0–80/100 km/h	s	6.2/8.6
Top speed	km/h	212
Fuel consumption (99/100/EC)		
Fuel type		Diesel min. 51 CN
Combined cycle	l/100km	4.4
Emissions (CO_2)	g/km	117
Efficiency label		B
Exhaust emissions classification		Euro 5
Power transmission		
Type of clutch		Two electrohydraulically operated multi-disc oil-bath clutches
Gearbox		Six-speed direct shift gearbox (DSG)
Exterior dimensions		
Number of doors		2
Length/width/height	mm	4,255/1,790/1,452
Wheelbase	mm	2,637
Track, front/rear	mm	1,549/1,520
Luggage compartment		
Length, rear seat raised/folded down	mm	839/1,558
Volume by VDA measurement: rear seat raised/folded down	l	380 -1,270
Weights		
Unladen weight	kg	1,375
Permitted gross weight	kg	1,880
Payload	kg	580
Perm. axle load, front/rear	kg	1,050/880
Perm. trailer load up to 12%, braked/unbraked	kg	1,600/680
Capacities		
Fuel tank	l	50

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IMAGE SOURCES

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Golf