World premiere

The new Mission Efficiency

Vienna, August 2026

Mission Efficiency – Volkswagen presents the world's most economical near-production electric vehicle

Key aspects – the Mission Efficiency

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KEY ASPECTS

- **Aerodynamics world record[1]** – Mission Efficiency[2] sets the new benchmark for all vehicles approved up to now for road use with a C_d value of 0.158
- **Efficiency world record[1]** – an average driving consumption[3] of 6.89 kW/100 km makes the Mission Efficiency the most economical e-vehicle in its class
- **Pioneer for new technologies** – solar roof supports vehicle electrical system, focus on recycling, patented rim deflectors perfect aerodynamic characteristics
- **Large-scale production technology** – in terms of technology, the Mission Efficiency is based on the MEB+ with front-wheel drive and shows the potential of the new ID. models
- **Concept suitable for everyday use** – as a 2+2-seater with a 481-litre luggage compartment, the well-thought-out Mission Efficiency is also ideal for everyday life
- **Technology flagship** – the Mission Efficiency demonstrates the impact of aerodynamics on the energy consumption and range of electric vehicles

IN BRIEF

Three world records. Volkswagen presents the world's most efficient e-vehicle with the new Mission Efficiency[2]. The concept vehicle has just set three world records[1]. Record number one: with a C_d value of 0.158, the concept vehicle glides through the air more aerodynamically than any other vehicle ever approved for road use. Record number two: consumption of 6.48 kWh/100 km during an 'ideal trip' where, amongst other things, the speed remains constant (in this case

68 km/h), there are no uphill gradients and auxiliary consumers such as the air conditioning system are deactivated. Record number three: thanks to its aerodynamics and a highly efficient electric drive, the Mission Efficiency is also the most economical near-production e-vehicle ever built.

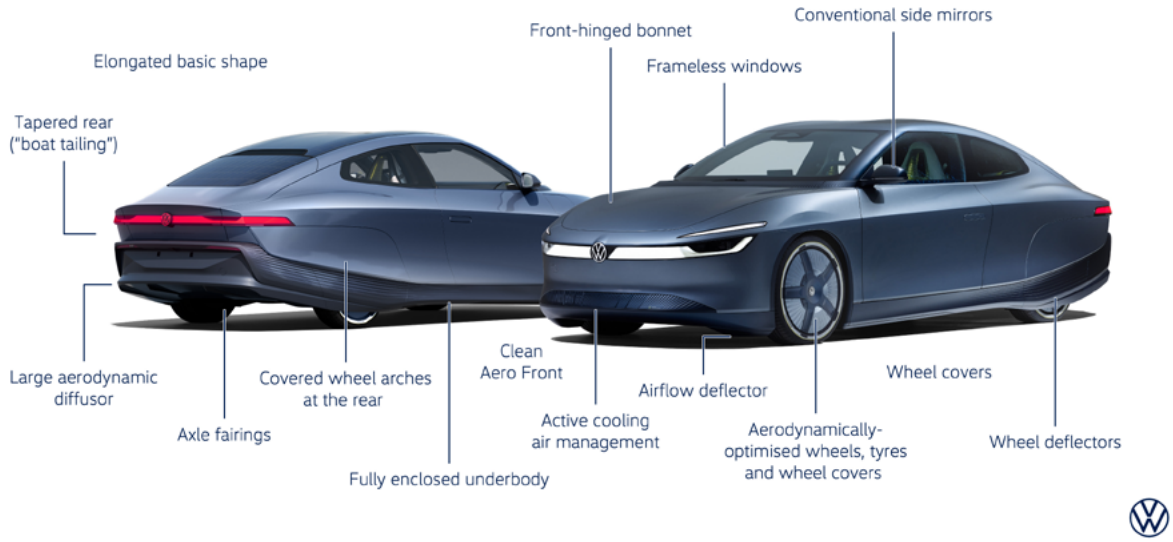
Average consumption of 6.89 kWh/100 km. During an officially documented consumption drive over a distance of 1,278.36 km from Volkswagen's German Research & Development Centre in Wolfsburg via Poznań (Poland) and Olmütz (Czech Republic) to the Austrian capital Vienna, the Mission Efficiency electric drive motor came in at a real consumption of just 7.51 kW/100 km including charge losses (6.89 kWh/100 km without charge losses). The route was completed at an average speed of 67.72 km/h; the top speed was 138 km/h. The 54.9 kWh battery[4] (net) was only charged once during the journey. Upon arrival in Vienna, the remaining range was 164.0 km.

Vienna was deliberately chosen as the destination for the record-breaking trip: the new ID. Polo is currently being presented to the international media there. In technical terms, the Mission Efficiency is based on precisely this large-scale series production vehicle or the MEB+ with front-wheel drive. Among other things, the 99 kW (135 PS)[5] electric drive motor and high-voltage battery were adopted from series production. This makes the Mission Efficiency much more than just a technology statement: the records show the efficiency potential already in the new generation of Volkswagen electric models.

Based on series production technology. Thomas Schäfer, CEO of the Volkswagen brand, Head of the Brand Group Core and member of the Group Board of Management: "Mission Efficiency is the ideal way to demonstrate what distinguishes Volkswagen in the electric age: technology for the masses – not just for the few. Rather than using specialist technology, the vehicle set its three world records using affordable production technology from the ID. Polo and ID. Cross[6] based on the MEB+ with front-wheel drive. This shows how much potential efficiency we can add to the latest generation of our electric cars. Developed in Wolfsburg and built by Kai Grünitz and his team, the Mission Efficiency is a symbol of German engineering expertise with clear customer benefits."

Mission Efficiency: c_d = 0.158

Targeted design of details

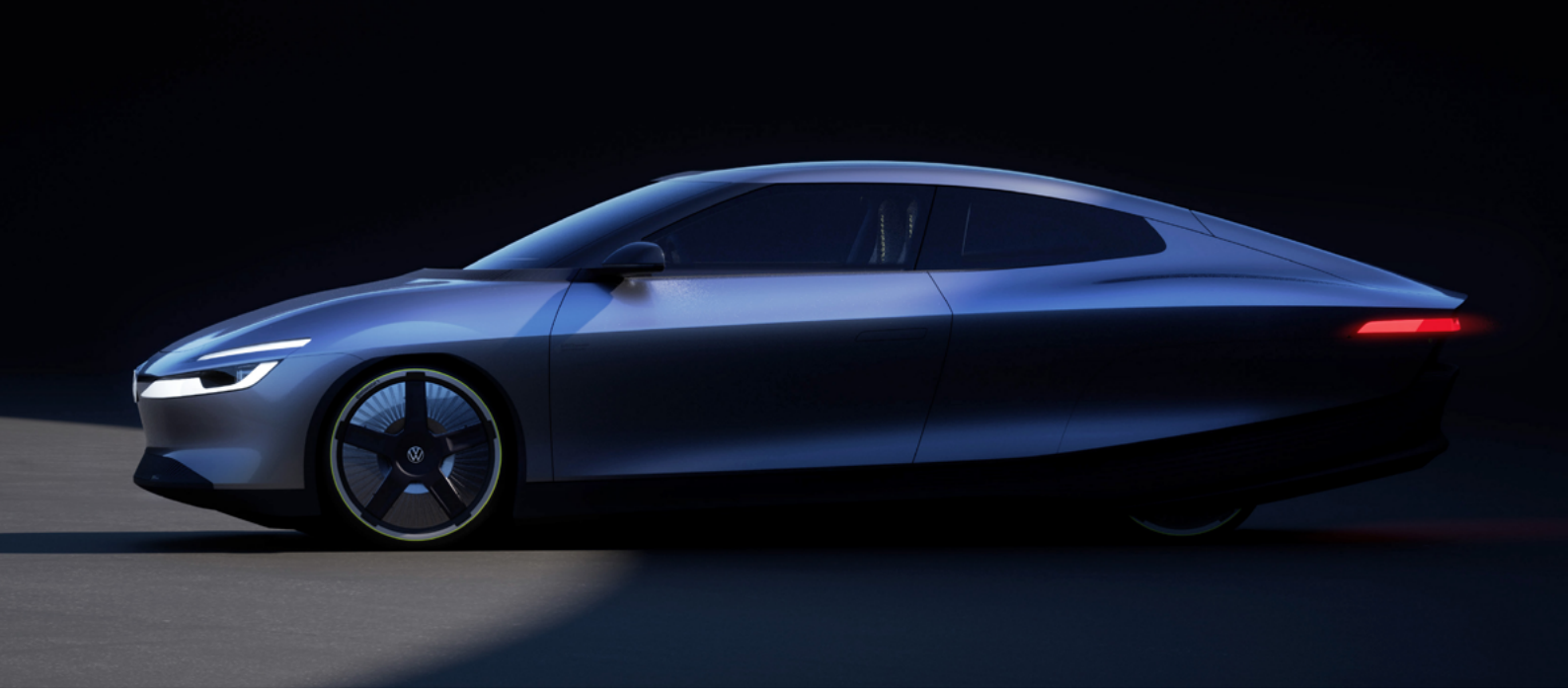


Record-breaking vehicle reflects the potential of the MEB+. Kai Grünitz, member of the Volkswagen Brand Board of Management responsible for Development and member of the Brand Group Core Board of Management for Development: "The new Mission Efficiency impressively demonstrates the huge potential of the drive system in our new ID. Polo. Developed for all MEB+ models with front-wheel drive, the system is extremely lightweight, very efficient and thus the ideal drive system for the record-breaking vehicle. It is also the result of the outstanding performance of the team in Wolfsburg which developed the Mission Efficiency. First of all, the team has proven that Volkswagen is also one of the world's leading manufacturers in the field of aerodynamics. At the same time, our team has impressively demonstrated that you can build the most efficient car in the world with affordable large-scale production technology."

Made in Wolfsburg. As Head of Volkswagen Preliminary Development, Christoph Riechel coordinated the collaboration between the team members: "In Wolfsburg, we have the capability to leverage the full spectrum of modern automotive manufacturing and develop technology flagships such as the Mission Efficiency – a project in which the combination of innovative technologies and Volkswagen's inherent drive to explore the boundaries of what is technically possible has resulted in the most efficient e-vehicle in its class." It is interesting to note that the Mission Efficiency demonstrates its efficiency potential compared with the production variant of the ID. Polo especially at higher speeds: at speeds of 80 km/h and above, the consumption advantage is more than 30 per cent. In other words: a trip in the Mission Efficiency at 140 km/h consumes approximately as much energy as a trip in the ID. Polo at 100 km/h.

Form follows aerodynamics. Visually, the Mission Efficiency is based on the new Volkswagen Pure Positive design language. Head of Design Andreas Mindt: "With its front end, the Mission Efficiency joins the new electric vehicle family around the ID. Polo and ID. Cross. The shape of the body itself uncompromisingly follows function and thus the laws of aerodynamics. This has resulted in the design of a state-of-the-art high-efficiency sports car in which the DNA of the legendary Volkswagen XL1 shines through." The XL1 presented in 2013 with a plug-in hybrid drive was the world's most economical production car.

2+2-seater. The Mission Efficiency is a two-door coupé with a large boot lid, 2+2 seats, a variable luggage compartment (481 litres) as well as additional stowage compartments under



the rear seats and in the side of the body (e.g. for the charging cable). While the interior can be used without restriction at the front, the two rear seats are intended for passengers up to a height of approx. 1.60 m. The coupé is nevertheless characterised by extremely good space utilisation for a record-breaking high-efficiency vehicle. The concept car was designed in such a way that it could theoretically be used by a young family of four.

Pioneering aerodynamics. The pioneeringly low drag as a product of the drag coefficient (C_d = 0.158) and small frontal area (A = 2.08 m^2) is the central aerodynamic feature of the Mission Efficiency. The three active cooling air flaps integrated flush into the front end are a special technical detail. They can be opened and closed individually or in combination in several stages. Whenever possible, the flaps only provide the minimum opening area required in order to keep the air resistance as low as possible. Further along the body, the flow-optimised silhouette – complete with striking lower airflow guides and fully enclosed rear wheels – tapers towards the rear in a teardrop shape, preventing braking aerodynamic turbulence from forming. Integrated into this fluid design is the very long roofline that sweeps down towards the rear, like in the legendary XL1. In addition, the fully clad underbody helped Volkswagen to establish a new benchmark in terms of aerodynamics. The aerodynamics and design teams used as reference points vehicles such as the XL1 and the record-breaking ID.R (fastest vehicle at the Pikes Peak International Hill Climb and fastest e-vehicle on the Nürburgring Nordschleife) as well as design features seen on supersonic jets.

Very flat, very long. The Mission Efficiency is 1,392 mm high, 1,744 mm wide and 4,775 mm long. Compared with the ID. Polo, this results in a significant increase in length (+722 mm). This additional length is due to a 100 mm longer wheelbase (2,700 mm) and a large rear overhang, which allowed the technical and design team to realise the teardrop shape of the body and the related pioneering aerodynamics. The doors of the Mission Efficiency feature frameless windows, also beneficial for aerodynamics. The door handles have been integrated into the outer skin for optimum airflow. They extend electrically, but still operate the lock itself mechanically; they can also be opened without problems in the event of a power failure. In contrast, the aerodynamically optimised exterior mirrors have a conventional design. Calculations and wind tunnel tests revealed that purely camera-based exterior mirrors would barely have been more efficient overall, but significantly more expensive in the context of series production – a possibility never completely ruled out.

Body structure and materials. The Mission Efficiency and the ID. Polo share the same drive system, the front axle including steering and the basic design of the rear axle. When comparing the concept car and the production vehicle, it is clear that numerous components of the ID. Polo had to be adapted to the new proportions and new design of the Mission Efficiency. The body combines the body structure of the ID. Polo with a likewise self-supporting aluminium structure. The doors, bonnet, boot lid as well as the wings and add-on parts are made of a high-strength CFRP aramid composite. The prototype also has EU road approval and meets the corresponding protection, strength and crash requirements.

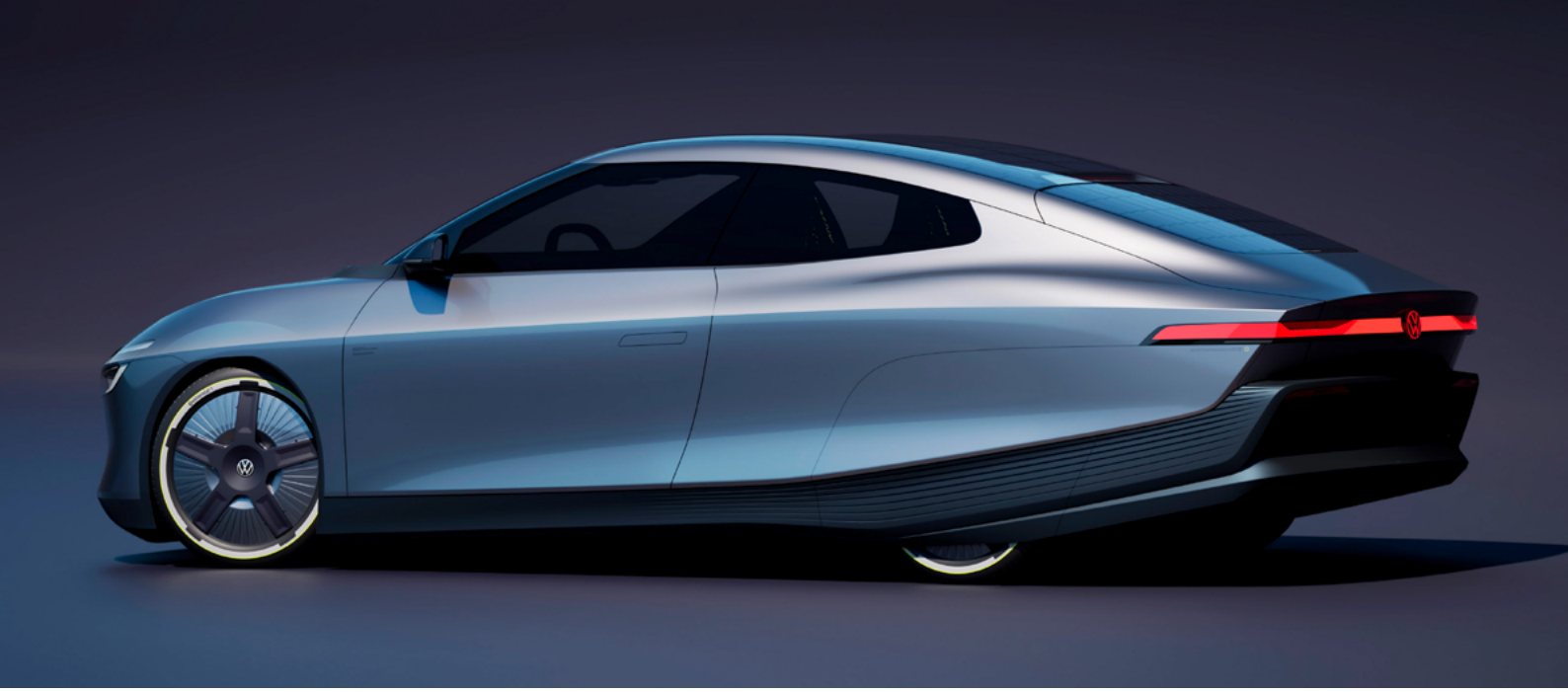
Chassis design and handling. The standard MacPherson front axle of the ID. Polo is used at the front. Compared with the ID. Polo, the Mission Efficiency's torsion beam axle has been made 170 millimetres narrower in order to reduce the track width and thus allow realisation of the teardrop-shaped design. Another objective of this narrower shape was to optimise the aerodynamics of the underbody at the rear. For this purpose, the spring/damper components had to be moved out of the airflow. Despite the narrower rear-axle track, the Mission Efficiency – with a slightly firmer setup than the ID. Polo – drives safely and neutrally and thus in a manner typical for a Volkswagen.

New semi-dry brake system. The Mission Efficiency has a new, semi-dry brake system. At the front is the hydraulic brake from the ID. Polo with its clearly defined response, while there is a new electromechanical brake at the rear. The brake at the rear, which was implemented for the first time in this concept car, reduces friction losses at the rear axle to almost zero, which leads to an increase in range. As another benefit, it was possible to omit the lines and brake fluid for the rear axle brake – this is also one of many measures to save weight wherever possible and make the most economical use of the space. In terms of driving dynamics, the brake force can be distributed variably to the wheels by the new electromechanical brake, which not only further improves recuperation, but also ensures more stable cornering and makes braking more comfortable and at the same time more powerful. The new brake was developed by Volkswagen together with international technology company AUMOVIO, which supplies the brake system for the ID. Polo.

Harnessing the sun's energy. Volkswagen has integrated a 370 W photovoltaic system into the glass roof and boot lid of the Mission Efficiency to optimise airflow. The system supplies the

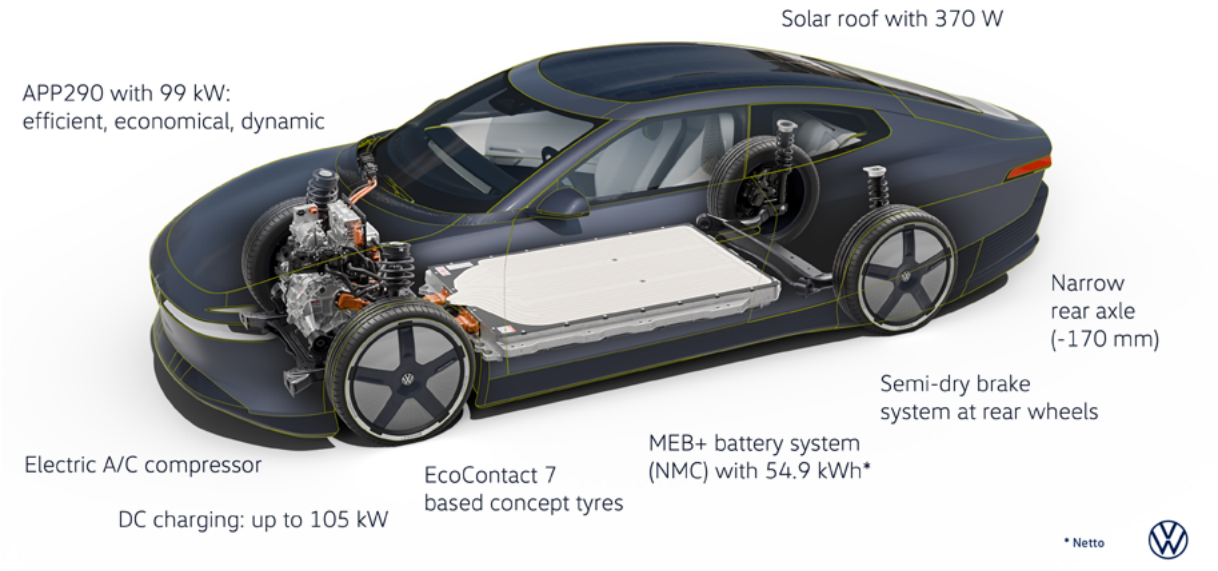
vehicle electrical system consumers. And this reduces the energy consumption of the high-voltage battery and increases the overall efficiency as well as the vehicle's real range. Depending on the season, region and weather conditions, the photovoltaic system increases the range by up to 30 kilometres per day.

'Bring your own device'. The interior of the Mission Efficiency is largely individually customised – in line with the character of a concept car. Modules such as the multifunction steering wheel, steering column switches, slightly shortened air conditioning block with haptic buttons and the central volume control have been adopted from the ID. Polo. However, the lightweight dash panel and door trims, door handle loops as openers as well as the strikingly styled sports seats and rear seats are new. Permanently installed speakers are replaced by a mobile Bluetooth box for weight reasons. As something that immediately catches the eye: unlike the ID. Polo, there is no permanently integrated infotainment display. Instead, a concept called 'Bring your own device' was developed here. The name says it all: the function of the infotainment screen is taken over by the driver's own Android or Apple tablet/smartphone, which is locked in position by a clamping rail and connected wirelessly to the vehicle. All of the infotainment system's functions are displayed on the screen of the paired device.



Mission Efficiency[2] – technical data

Drive	MEB+, front-wheel drive
Battery size (net)[4]	54.9 kWh
Power	99 kW (135 PS)
DC charging capacity (max.)	105 kW
WLTP driving consumption	8.4 kWh/100 km
Consumption during record trip	7.51 kWh/ 100 km incl. charge losses
Vmax and 0-100 km/h	160 km/h and 9.0 s
Length	4,775 mm
Width	1,744 mm (without mirrors)
Height	1,392 mm
Wheelbase	2,700 mm
C_d x A	0.158 x 2.08 m^2



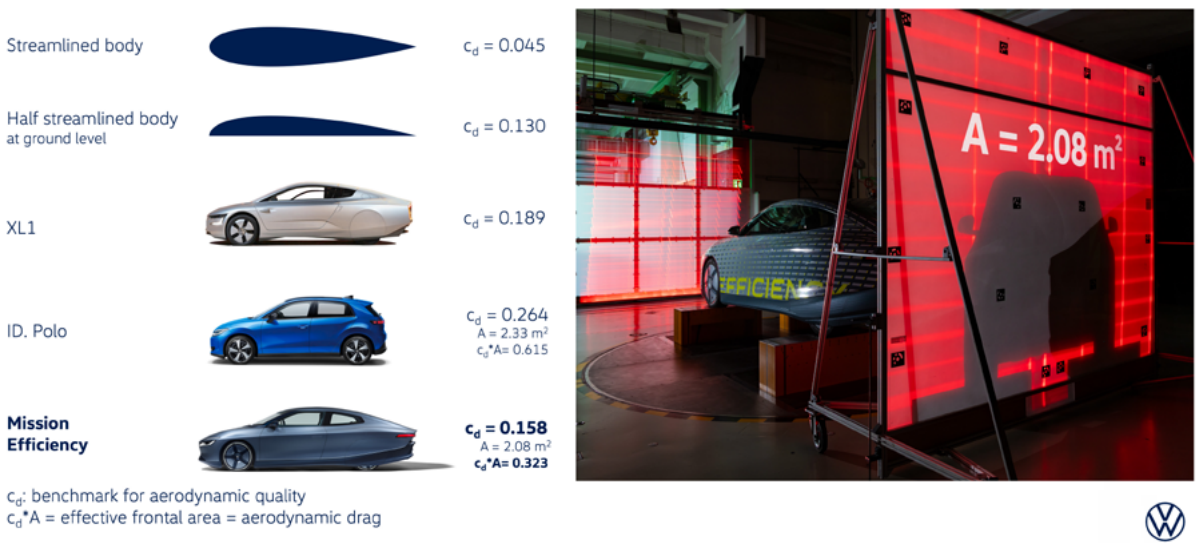
Key aspects – the Mission Efficiency in detail

EXTERIOR – AERODYNAMICS AND DESIGN

MEB+ with front-wheel drive as the starting point. At the start of the development of the Mission Efficiency, a technical 3D package was created with the ID. Polo front end and all new parameters to be defined. The entire team also agreed that the Mission Efficiency should be recognisable as a Volkswagen and suitable for everyday use despite its ambitions to beat records. This gave rise to the concept of a 2+2-seater with a highly usable luggage compartment. The drive system was also just as important as the aerodynamics, design and space efficiency. However, since it and its battery were taken from the ID. Polo, the drive did not have to be redesigned. Nevertheless, modifications were also incorporated here as part of the development process.

Development is teamwork. The stated goal of all parties involved: "We will build the most efficient vehicle in its class." The Preliminary Development department took the lead here. Various pre-development topics were brought together in the creation process of the Mission Efficiency. The dominant development area in this project was aerodynamics, because drag is the most important variable for efficiency in addition to the drive system and weight. As the drive adopted from the new ID. Polo (MEB+) already offered maximum efficiency, it was possible to focus on bringing the drag to a new record level and saving weight by reasonable means. Against this background, other areas such as design were subordinated to aerodynamics. Thanks to close and continuous integration of all development areas, this was so successful that the subsequent final design draft corresponded perfectly to the actual aerodynamics specifications apart from a few minor details. The design makes the concept car's efficiency visible in a particularly attractive way – with the parameters of the new Volkswagen Pure Positive design language.

Longtail like the XL1 and the record-breaking vehicle ID.R. The pioneeringly low drag as a product of the drag coefficient (C_d = 0.158) and small frontal area (A = 2.08 m^2) is largely due to the extremely long and flow-optimised teardrop shape of the body. Here, the aerodynamics and the design were based on the results of computer simulations and wind tunnel tests as



well as experience with extreme vehicles such as the XL1 built in a special series and the record-breaking ID.R. It was clear from the outset that an elongated coupé shape with a tapered rear end would offer the greatest efficiency potential. In the Mission Efficiency, this tapering occurs in both width and height to keep the air flowing close to the vehicle body for as long as possible, thereby preventing flow separation and the resulting drag-inducing turbulence, known as the wake. As an interesting side note, the basic shape of the body alone accounts for 47 per cent of the first-class aerodynamic properties of the Mission Efficiency. However, the Volkswagen vehicle is not only impressive in terms of facts and figures, but also thanks to its striking design aesthetics. Characteristic features here are a sports car adaptation of the current front end from the latest ID. models, the almost 4.80-metre-long and very flat coupé or fastback silhouette with the fully enclosed rear wheels and the narrow rear end. The aerodynamics and design of the Mission Efficiency in detail:

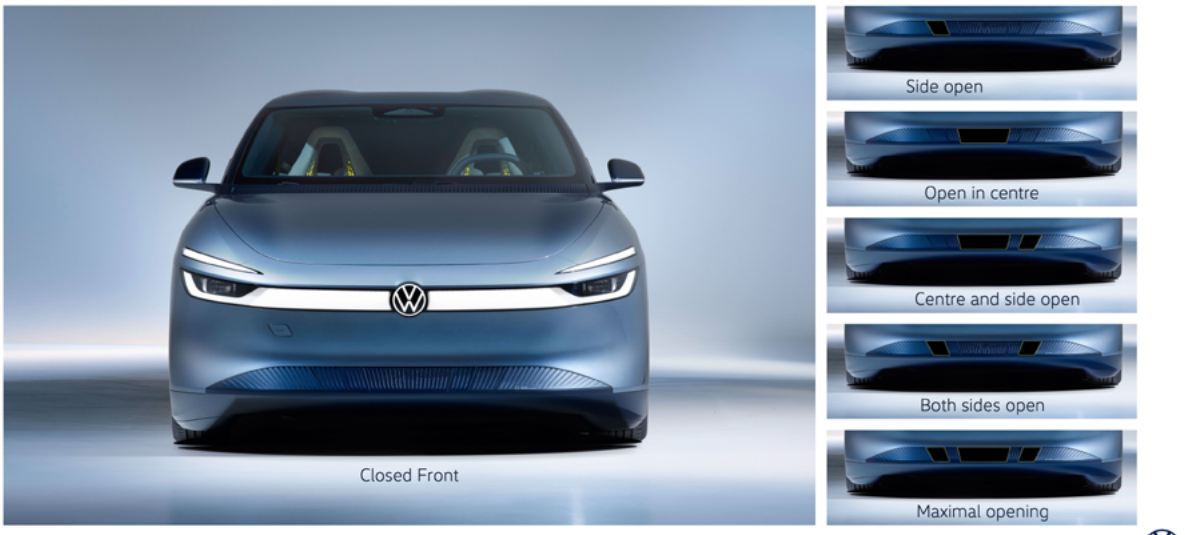
FRONT END

Member of the ID. family with front-wheel drive. The front end is largely based on the production components of the ID. Polo and thus on the MEB+ with front-wheel drive. In order to allow the bonnet to slope down particularly low and thereby reduce the frontal area and drag, it was moved downwards in the area of the cowl panel and windscreen base and its hinges were moved forward. The bonnet is thus raised towards the headlights when opened. The wiper housing concealed in front of the windscreen on the ID. Polo was exposed by this measure; rising towards the windscreen, its design makes the aerodynamic air routing clearly visible. Both functionally and visually, the area is inspired by the structure of aircraft wings. Like the A-pillars, the flat aerodynamic windscreen was also optimised for better airflow. Technically, the LED headlights of the ID. Polo follow below the bonnet. A key component of the aerodynamic concept is also the new 'Clean Aero Front' below the illuminated horizontal bar, which incorporates the VW badge. The smooth-surfaced area extends downwards towards the road into an area with active cooling air flaps and transitions outwards into air guide elements. These air guide elements channel the air in a targeted manner towards the striking, lateral air guides of the lower silhouette.

Front end with active cooling air flaps. Three active cooling air flaps integrated flush into the front end – one large central flap and two smaller ones on the outside – are a special

Mission Efficiency

Innovative Clean Aero Front with five possible opening scenarios



technical feature. They can be opened and closed in several stages, individually or in combination, and offer five opening cross-sections. Whenever possible, the flaps only provide the minimum opening area required in order to keep the air resistance as low as possible. During DC charging of the Mission Efficiency, the flaps are also opened in order to optimise the thermal conditions. The flaps first move backwards and then swing out of the airflow. The flaps are opened and closed in stages. If all three flaps are closed, no air can enter – the Mission Efficiency then achieves a C_d value of 0.158. The fact that, unlike a petrol or diesel engine, the electric drive motor does not require combustion air or similarly strong cooling naturally has additional advantages. The otherwise usual air curtains for airflow around the front wheels could be dispensed with due to the optimally designed front aerodynamics with side air guides and active cooling air flaps.

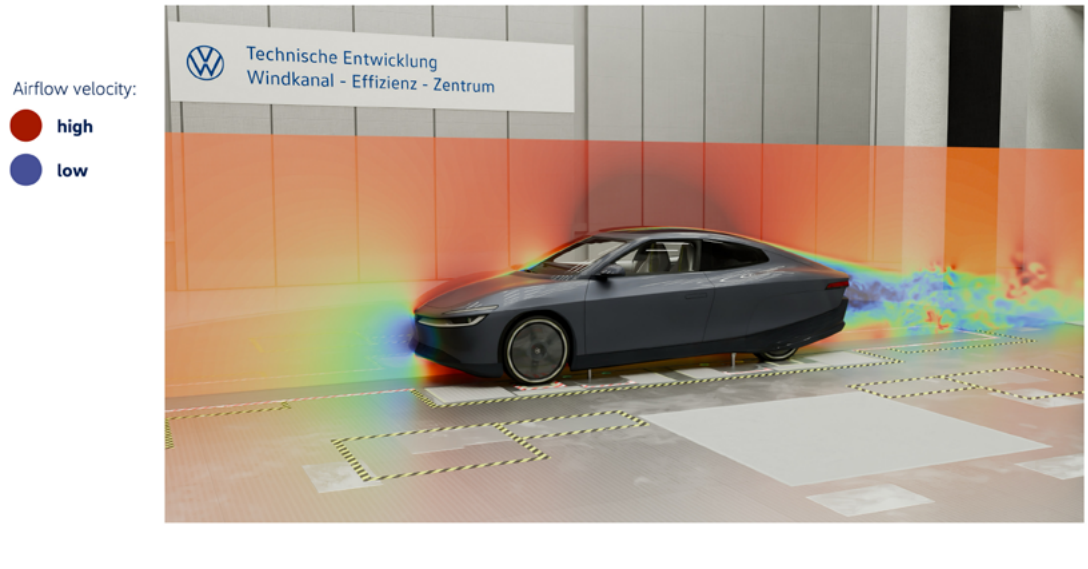
SILHOUETTE

Patented rim deflectors. The smooth-surfaced silhouette is characterised by its long length of almost 4.80 metres at a height of less than 1.40 metres and an extremely long character line that extends from the front to the rear. No less distinctive are the striking integration of the wheels and the rising side member tapered towards the rear – from an aerodynamic point of view, this is an integrated air guide element. Here, too, form consistently follows function. The type of wheel and tyre integration is also particularly interesting. This is because the wheels are responsible for 25 to 30 per cent of the aerodynamic resistance. Consequently, a high amount of effort was required to develop new solutions. In the case of the front wheels, for example, the wheel arch was placed close around the radius of the tyre to reduce turbulence in the wheel housing. In addition, new and patented rim deflectors are used on the inside of all wheels. They prevent air from entering the rims and causing turbulence there. On the visible outside of the wheels, the flat, flow-optimised design of the hubcaps contributes to the excellent aerodynamics. As the hubcaps are made of a transparent material, the rims still have a three-dimensional look. However, this look is only recognisable at the front, as the rear wheels are fully enclosed.

Controlled airflow. The full cladding of the rear wheels makes a significant contribution to ensuring that the airflow to the rear remains continuous and is guided to the rear end in a controlled manner. The air guide in contrasting colour and sweeping up towards the rear is also integrated

Mission Efficiency aerodynamics

Simulated airflow characteristics



into this optimum airflow behaviour. Towards the rear, it merges into the aero diffuser. The design of this rear side area is unique and makes the surface of the side section appear to be as streamlined as it actually is, despite the fully enclosed wheels. The panelling itself is cleverly used for additional stowage space in the sides of the body: on the front passenger side, for example, there is a stowage compartment for the charging cable behind the fold-down trim. Tyres from Continental developed specifically for the concept car make a significant contribution to record efficiency. They are based on the standard EcoContact 7 tyre and combine a tread developed for extremely low rolling resistance with aerodynamically optimised sidewalls. This reduces energy losses and significantly supports the exceptional efficiency of the vehicle.

Well-judged decisions. When it came to the exterior mirrors, a deliberate decision was taken not to use camera systems. Well-designed conventional mirrors have only a limited aerodynamic disadvantage, while camera modules would have required additional energy for the cameras and displays and might not have provided the required field of view due to the vehicle's side curvature. Nevertheless, the mirror glass and housing were specially developed and optimised up to the legal field of view limits. In the area of the door handles, on the other hand, the team did not choose a conventional solution as the smooth-surface recessed door handles could be adopted from the Group modular matrix. They extend electrically, but still operate the lock itself mechanically; they can therefore also be opened in the event of a power failure.

REAR END

Elongated coupé shape. With its charismatic design, the narrow rear of the Mission Efficiency immediately makes it clear that no ordinary car is on the road here. 'Form follows function' becomes a tool and a style element. Viewed from above, the roof surface – with its central recess – flows seamlessly into the rear section, merges into the boot lid and then finds its aerodynamically precise conclusion at the spoiler lip above the tail light clusters. The lines of the side section also taper here and flow into the spoiler lip. Braking air turbulence is thus prevented better than ever before. In design jargon, this elongated and aerodynamically optimised coupé shape is called 'boat-tail design' – referring to the lines of a boat's stern. In the case of the Mission Efficiency, the rear end transitions into the razor-sharp-looking spoiler lip.

This precisely designed lip controls the airflow and separates it from the rear of the vehicle with minimal turbulence. At the same time, the spoiler lip, barely recognisable as a spoiler, reduces lift at the rear axle, thereby increasing the driving stability of the Mission Efficiency.

Horizontal LED bar and aero diffuser. The upper and lower rear areas are divided by a wide, red LED rear light bar with the VW badge, which is also illuminated in red. The narrow horizontal LED bar extends into the side areas and lends the rear end more width and its own distinctive elegance. Around half of the purely vertical rear area is occupied by the aero diffuser, into which the side air guides merge. Here, the airflows from the underbody and sides are guided away in a targeted and precise manner.

UNDERBODY

Continuous underbody cladding. Another decisive aerodynamic factor of the Mission Efficiency is the underbody, which is almost completely enclosed by a cladding. In order to achieve the necessary progress for a C_d value of 0.158, Volkswagen uses aerodynamically shaped axle claddings and special air guide elements as shields in front of the front and rear wheels. Significant progress was also achieved through the patented rim deflectors. These air guide elements greatly reduce braking air turbulence in the wheels. In addition, the rear axle of the ID. Polo was heavily modified for use in the Mission Efficiency – it was made narrower and the spring control arm was removed from the airflow. Putting this into context, approximately 12 per cent of a vehicle's aerodynamic drag occurs in the underbody area – the optimisations here therefore have a noticeably positive effect in the case of the Mission Efficiency.

COLOUR

Aero Silver Grey and Stardust Blue. The paintwork of the body in Aero Silver Grey specifically matches the aerodynamic design. It acts like liquid metal and harmonises perfectly with the sculptural lines of the Mission Efficiency. The colour of the aerodynamic add-on parts matches the Aero Silver Grey paintwork. They feature a new petrol shade with the designation

Stardust Blue. This comes in two versions: while the air guides and the wiper box surround have a matt finish, for example, details such as the A-pillars and mirror covers are painted in high-gloss Stardust Blue. Stellar Glow is used as a luminous contrast. This colour enhances the details of the rims, symbols, lettering, seat belts and trim surfaces in the interior.

INTERIOR – CONCEPT AND SPACE UTILISATION

Minimalism, lightweight construction and optimal usability. The interior of the Mission Efficiency is a completely new development. In keeping with the character of a pure efficiency vehicle, the team focused on lightweight construction and minimalism. As the vehicle interior follows the new Volkswagen Pure Positive design language, a clearly designed, well-organised and cosy interior space was created, in which every detail is perfectly arranged, both ergonomically and visually. The multifunction steering wheel with a new cover material, the two steering column switches as well as the operating panel for the lights and volume controls have been adopted from the ID. Polo. The latter is accommodated in a visually floating centre console together with the buttons for the power windows, mirror adjustment and air conditioning block. A stowage net for smartphones and two USB-C ports have also been integrated here.
The comfortably designed lightweight dash panel is designed as a wraparound and also visually free-floating surface. Stylistically, it is carried over into the doors.

Seats, materials and circularity. A number of pre-development topics were incorporated into the Mission Efficiency in order to meet the requirements for the concept vehicle. For example, the slimline sports seats for the driver and front passenger stand out in the interior.
The focus here is on open structures as design elements combining aesthetics with functionality. The transparent and ergonomic head restraints in particular are a real eye-catcher: while the centre is completely open, the side surfaces form a lightweight grid structure consisting of three-dimensional triangle patterns. The 3D structure – printed in-house – is made from an elastic plastic (TPU, thermoplastic polyurethane) which is also used for high-quality sports shoes.
The material offers pleasant comfort in the area of the head restraint, visualises technical avant-garde design and is fully recyclable. A background light is integrated in the head restraints. The covers of the seat cushions, which comprise just two elements, have a pleasant touch and feel.

The “de-energised” door panels fit into this picture: since they do not have any electrical components such as loudspeakers, background lighting, power windows or mirror adjustment controls, they are fully recyclable as one piece. Even the floor in the interior reflects a new approach and is made of a lightweight composite material. Non-slip rubber studs are integrated into this material, making the otherwise separate floor mats a functional component of the interior floor. The two-part backrest of the newly designed rear bench seat can be folded down, making it extremely suitable for everyday use. This opens up a load compartment with a length of 1.80 m, which can also be used for transporting larger items. In the basic configuration it holds 481 litres when loaded up to the height of the rear seats. Two additional small stowage boxes (2 x 4 litres) have been integrated under the rear bench seat. Last but not least, there are two additional compartments behind the side body panelling of the rear wheels with a volume of 2 x 16 litres.

Portable sound and infotainment. Furthermore, the minimalism achieved in the interior is based on the question as to which features are absolutely essential on a journey and which ones can be omitted. Here are just a few examples: permanently installed speakers were omitted in favour of a mobile Bluetooth box. A flashlight that can be flexibly integrated into the vehicle replaces the ambient lighting. Both devices have their own battery on board and thus do not put additional strain on the vehicle battery. There is also more storage space in the doors without permanently installed loudspeakers. The three drink holders for energy drinks can be seen more as a humorous touch and as a reference to the long-distance characteristics of the marathon electric vehicle. A mechanical clamping rail and a device holder from a 3D printer enable a smartphone or tablet and the torch to be inserted at several positions in the cockpit. The body is designed in such a way that potential owners of such a vehicle can create their own very specific device solution using a 3D printer. Under the motto ‘Bring your own device’, the infotainment functions - such as navigation and the media library – are shown on the user’s own smartphone or tablet. All basic driving functions as well as the air conditioning controls and display via a small separate e-paper display are also available without a mobile device.

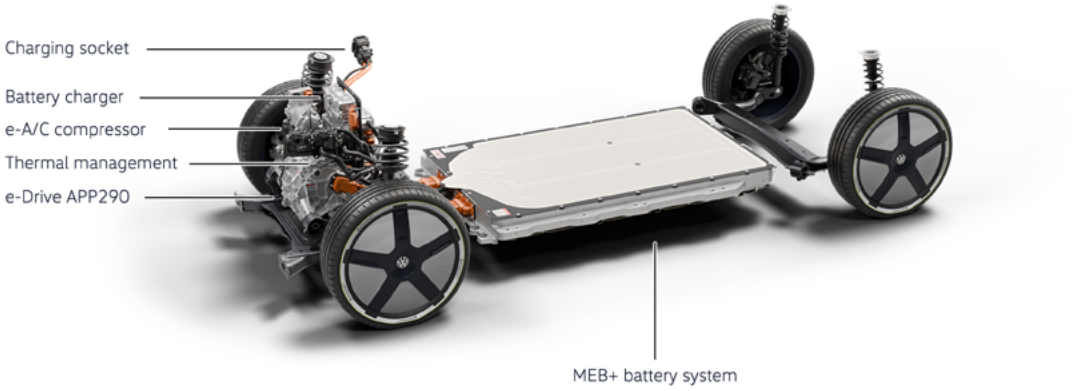
ELECTRIC DRIVE – TECHNOLOGIES AND PERFORMANCE FIGURES

Drive layout and components. The Mission Efficiency has an electric front-wheel drive. The heart of this drive system is the APP290 electric drive motor – a permanently excited synchronous motor. The motor itself is small and very light at 75 kg – ideal for the concept car. A one-speed gearbox with adapted oil cooling and a longer ratio is flange-mounted to the motor housing. The 99 kW version (135 PS) of the electric motor is used in the Mission Efficiency – this is the current medium power output of the ID. Polo[5]. The motor develops a maximum torque of 264 Nm and a maximum speed of 13,000 rpm and is coupled to the 54.9 kWh[4] high-voltage battery (net).

New pulse inverter as the coordinator. The pulse inverter, which was first introduced with the ID. Polo and is now also used in the Mission Efficiency, coordinates the power and torque development as well as the recuperation of the drive. These power electronics also convert the direct current (DC) stored in the battery into the alternating current (AC) needed by the electric drive motor. The new pulse inverter is a module developed by Volkswagen that increases efficiency and thus reduces consumption. Other components of the drive integrated compactly in the front end include the AC and DC charging sockets, the battery charger and an electric A/C compressor as an important component of the thermal management system.

Natural refrigerant. The Mission Efficiency has a heat pump integrated into the air conditioning system on board. This reduces the energy consumption of the heating system at cold outside temperatures. The air conditioning system and heat pump are operated with the natural refrigerant R744. Volkswagen is the only automotive manufacturer in the world to have already developed a heat pump with a natural refrigerant for use in series production and is thus systematically paving the way for the use of PFAS-free refrigerants.

Efficient unified cell. The flat lithium-ion battery system of the Mission Efficiency – the unified cell – is located in the vehicle floor between the front and rear axles. It is a new development by the Volkswagen Group and its subsidiary PowerCo, which is already offered in series production in the MEB+ with front-wheel drive. The new battery system uses cell-to-pack technology, where



the cells are combined directly into a battery pack without the intermediate step via module housings. Three of these battery packs form the energy storage unit in the battery system. In parallel to this, its housing reinforces the body structure of the record-breaking vehicle. The battery used on board the Mission Efficiency has an energy content of 54.9 kWh[4] (net) – a nickel-manganese-cobalt (NMC) variant with a very high energy density. The AC charging capacity is 11 kW. DC quick-charging stations were used to charge the battery with a capacity of up to 105 kW – though only one charge was required on the record-breaking journey from Wolfsburg to Vienna. The battery used in the Mission Efficiency corresponds to the standard battery in the new ID. Polo; only the maximum usable energy quantity was increased by 2.9 kWh[4] by software adaptation.

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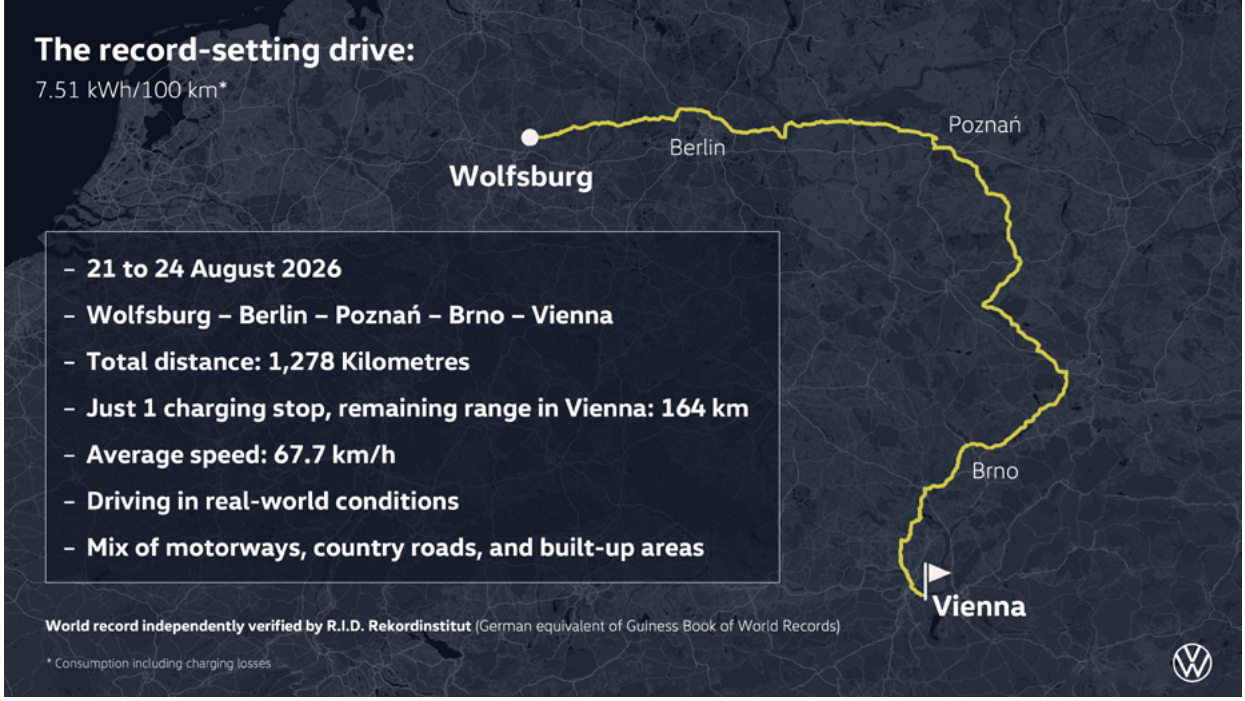

NOTES

1. Category "Near-production four-seater electric vehicle suitable for everyday use" of the Record Institute Germany (RID)
2. Concept vehicle. Not for sale.
3. Energy consumption without charge losses
4. Software adaptation of the usable battery energy from 52.0 to 54.9 kWh (net). Since the longevity of the battery is to be guaranteed in series production, the maximum energy content is deliberately not used. These conditions do not apply to a record vehicle with limited deployments
5. ID. Polo (99 KW) – combined power consumption 14.9–13.6 kWh/100 km; combined CO_2 emissions 0 g/km; CO_2 class: A
6. ID. Cross - combined power consumption 16.9–14.3 kWh/100 km; combined CO_2 emissions 0 g/km; CO_2 class: A