Media Information

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New Opel Mokka – Powertrain and aerodynamics

Energy and Aerodynamics: New Mokka is Extra Efficient

- Motor or engine: All electric or with state-of-the-art combustion engines
- Emission-free fun to drive: Electric motor with 100kW (136hp) and 260Nm torque
- Economical diesel and petrol engines: ideal for town, countryside and autobahn
- Leader of the pack: 0.32 cD makes Mokka best in class
- For lower drag: Mokka features air curtains and active aero shutter

Rüsselsheim. The new Opel Mokka is a pioneer in every respect - with a fascinating and aerodynamic design, innovative technologies and highly efficient powertrains. Opel offers the Mokka-e with 100kW (136hp) electric drive as well as with state-of-the-art internal combustion engines and power outputs ranging from 74kW (100hp) to 96kW (130hp) (NEDC fuel consumption[1]: urban 6.0-4-4 l/100km; extra-urban 4.3-3.4 l/100km; combined 4.9-3.8 l/100km, 113-99 g/km CO_2).

The highly efficient multi-energy platform CMP (Common Modular Platform) makes the new Mokka's variety of powertrains possible. This lightweight and efficient modular system offers maximum flexibility in vehicle development and allows the use of a purely battery-electric drive as well as internal combustion engines.

In addition, the engineering team in Rüsselsheim has worked particularly hard on reducing weight on the one hand (saving up to 120kg vs the previous generation) while enhancing the body stiffness by 15 per cent. The benefits are obvious: the new Mokka consumes substantially less, while being much more responsive, agile and fun to drive. Furthermore,

[1] The fuel consumption and CO_2 emissions figures mentioned are determined according to the new World Harmonised Light Vehicle Test Procedure WLTP (Regulation EU 2017/948), and the relevant values are translated back into NEDC to allow the comparability with other vehicles. Please contact your dealer for the latest information. The values do not take into account in particular use and driving conditions, equipment or options and may vary depending on the format of tires.

sophisticated technologies such as air curtains and an active cooling shutter represent the state of the art in automotive drag reduction. Depending on the model variant, they cut the drag factor to an excellent 0.32 cD.

Emissions-free, electrifying, full of energy: new Opel Mokka-e

Driving the Mokka-e combines emission-free operation with an exhilarating experience. The electric motor delivers 100 kW (136 hp) and 260 Newton metres of maximum torque, immediately available from a standing start. Immediate torque, agility and dynamics are among the outstanding characteristics; 9.1 seconds are all take to accelerate from zero to 100 km/h, zero to 50 km/h is completed in only 3.7 seconds[2]. Drivers can choose between three drive modes – **Normal, Eco** and **Sport** – for a good balance or the most fun, depending on their preferences. The Mokka-e has a purely battery-electric range of up to 324 kilometres according to WLTP[2]. The electronically limited top speed is 150 km/h for preserving the energy stored in the 50 kWh battery and the range.

When Mokka-e drivers need a “refill”, it takes only 30 minutes to fill the battery to 80 per cent state-of-charge at a 100 kW DC fast-charging station. Whether wall box, high-speed charging or cable solution for the household socket: The new Mokka-e is ready for all charging options, from single-phase to three-phase at 11 kW. It also convinces with an eight-year/160,000km warranty for the battery.

The “universal charger” with infrastructure-specific adapters allows charging at nearly all local plug sockets and public charging stations. The “universal charger” is therefore ideal for customers who usually charge at home, but sometimes make longer journeys and need to recharge “on the road”.

In order to make driving the Corsa-e even simpler and more relaxing, “OpelConnect”, the “myOpel” app and “Free2Move” offer special solutions for electric vehicles (see “Comfort and assistance systems”).

[2] Range determined according to WLTP test procedure methodology (R (EC) No. 715/2007, R (EU) No. 2017/1151). The actual range can vary under everyday conditions and depends on various factors, in particular on personal driving style, route characteristics, outside temperature, use of heating and air conditioning and thermal preconditioning.

New engines: Ideal balance between efficiency and performance

The new Mokka's lively yet economical petrol and diesel engines offer power outputs ranging from 74W (100hp) to 96kW (130hp). The fun starts with the entry-level 74kW (100hp) 1.2 Turbo combined with a six-speed manual gearbox (fuel consumption NEDC[1] combined: 4.6 l/100km, 106-104 g/km CO_2). Higher performance is supplied by the 96kW (130hp) 1.2 Turbo. Despite the strong power output, fuel consumption of the all-aluminium engine remains moderate with either of the six-speed manual or eight-speed automatic transmissions (preliminary fuel consumption NEDC[1]: combined 4.9-4.5 l/100km, 113-102 g/km CO_2).

High efficiency and lively performance are characteristic of the new petrol engines. Internal friction and friction losses are minimised. The turbocharger also reacts immediately, with strong torque development already at low rpm. Maximum torque of the 74kW (100hp) 1.2 is 205Nm; the top 96kW (130hp) unit even develops 230Nm. With the majority of maximum torque available in a wide band, both engines are notable for their high driveability. At least 95 per cent of maximum torque is available between 1,500 and 3,750rpm – in combination with the low vehicle weight, this enables very good driveability.

The driving performance matches the high efficiency of the engines. The new Mokka with 96kW (130hp) and manual transmission reaches a maximum speed of 202km/h, with zero to 100km/h acceleration in 9.1 seconds. Equally impressive is the 1.2 Turbo with 74kW (100hp). With a top speed of 188km/h, it accelerates from zero to 100km/h in 10.6 seconds.

The 74kW (100hp) entry-level engine is fitted with a six-speed manual gearbox as standard. With the 96kW (130hp) 1.2, customers can choose from a six-speed manual or a smooth eight-speed automatic. Adaptive shift programmes and Quickshift-technology represent the state-of-the-art in the Mokka's market segment. Drivers can shift gears themselves via the standard paddles at the steering wheel.

High-tech and high efficiency: 1.5 diesel

The two petrol engines are joined by a lively 1.5-litre, four-cylinder diesel with six-speed manual transmission, producing 81kW (110hp) and maximum torque of 250Nm (fuel consumption NEDC[1]: combined 3.8 l/100km, 100-99 g/km CO_2). With a top speed of 190km/h, the diesel accelerates the Mokka from zero to 100km/h in 10.8 seconds.

For optimum exhaust after-treatment, the diesel engine's emissions reduction system – consisting of a passive oxidation catalyst/NOx adsorber, AdBlue injector, SCR catalyst and Diesel Particulate Filter (DPF) – is grouped together as a compact single unit, as near as possible to the engine. The NOx adsorber acts as a cold start catalyst, reducing NOx emissions at temperatures below the SCR light-off.

At a glance: Mokka and Mokka-e drivetrains

Mokka	**1.2 Turbo**	**1.2 Turbo**	**1.2 Turbo**	**1.5 Diesel**	**Mokka-e**
Power (kW/hp) @ rpm	74/100 @ 5000	96/130 @ 5500	96/130 @ 5500	81/110 @ 3500	100/136
Torque (Nm @ rpm)	205 @ 1750	230 @ 1750	230 @ 1750	250 @ 1750	260
Max. speed (km/h)	188	202	200	190	150 (limited)
0-100 km/h (seconds)	10.6	9.1	9.2	10.8	9.0
Emissions	Euro 6d	Euro 6d	Euro 6d	Euro 6d	--
Transmission	MT6	MT6	AT8	MT6	--
NEDC fuel consumption (l/100 km)[1]					
Urban Extra-urban Combined Combined CO_2 g/km	5.6-5.5 4.1-4.0 4.6 106-104 g/km	5.4-5.3 4.1-4.0 4.6-4.5 104-102 g/km	6.0-5.9 4.3 4.9 113-111 g/km	4.4 3.4 3.8 100-99 g/km	
WLTP fuel consumption (l/100 km)[2]					**Energy consumption (WLTP[2])**
Combined CO_2 g/km	5.7-5.5 129-124	5.7-5.5 128-124	6.0-5.9 137-133	4.5-4.4 118-114	18.0-17.4 kWh/100 km

Air curtains and active shutters: innovations for higher efficiency and lower drag

In addition to the powertrains, efficient aerodynamics are increasingly important. Low drag means that the car needs less energy to move, which in turn results in lower fuel consumption and emissions.

As with all Opel's newly developed cars, the carmaker's engineers optimised the new Mokka's aerodynamics in the wind tunnel of Stuttgart University (at the Research Institute of Automotive Engineering and Vehicle Engines). Depending on the model variant, they cut the drag factor to an excellent 0.32 cD.

The basis for the high aerodynamic efficiency is the new Mokka's frontal area of only 2.27 m^2, which is enhanced by the pure and bold design. With the aid of computational fluid dynamics (CFD) and attention to detail in the wind tunnel, Opel's aero experts then chiselled down to the excellent drag coefficient by fine-tuning every detail that helps improve the aerodynamics.

The engineers optimised the design of the new Mokka's characteristic Opel Vizor, as well as the shapes of the A-pillars and the exterior mirrors. In addition, cladding covering the bottom of the engine compartment and the underside of the body improves the airflow beneath the car.

The new Mokka displays fins at the sides of the tailgate and an elongated spoiler at the rear edge of the roof, in order to reduce the separation that causes drag. In addition, the spoiler lowers aerodynamic lift on the rear axle, which further improves straight-line stability, especially at higher speeds.

Other major sources of drag are the wheels, tyres and wheelhouses. The new Mokka therefore features innovative air curtains that increase aerodynamic efficiency in this area. An air curtain is an integrated duct on each side of the front fascia that creates a tall, thin jet of air across the face of the front wheel and tyre. The air curtain directs the flow smoothly across the wheel openings, decreasing the amount of wake and separation from these areas.

The new Mokka also benefits from an active shutter that further reduces drag and improves fuel efficiency by automatically closing the frontal opening when cooling air is least needed. Until recently, this innovation has been more common on more expensive cars from higher segments.

When closed, the shutter system enhances aero performance by redirecting airflow around the front of the vehicle and down the sides, rather than through the less aero efficient engine compartment.

The shutter is open or closed depending on engine coolant temperature and speed. For example, the shutter opens when the car is traveling up a hill or in hot city driving. The shutter closes when less engine cooling is required, for example at urban-road speeds.

The results of these efforts are impressive: compared with the previous model, which had a drag coefficient of 0.35, CO_2 emissions in the WLTP[2] cycle are up to 9.0 g/km lower, while drag at motorway speeds has been reduced by 16 per cent.

About Opel
Opel is one of the largest European car manufacturers and a leader in the reduction of CO_2 emissions thanks to its extensive electrification offensive. The company was founded by Adam Opel in Rüsselsheim, Germany, in 1862 and started building automobiles in 1899. Opel is part of Stellantis NV, a global leader created for the new era of sustainable mobility as a result of the merger between Groupe PSA and FCA Group in January 2021. Together with its British sister brand Vauxhall, the company is represented in more than 60 countries around the globe. Opel is currently consistently implementing its electrification strategy to secure sustainable success and ensure that the future mobility demands of customers are met. By 2024, an electrified variant of each Opel model will be available. This strategy is part of the company plan PACE! with which Opel will become sustainably profitable, global and electric.
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Contact:

Martin Golka	+49 (0) 6142-6921574	martin.golka@stellantis.com
Colin Yong	+49 (0) 6142-6922084	colin.yong@stellantis.com