Sustainability in the Macan Electric

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Supply chain

Porsche has taken measures to reduce the Macan's CO_2 emissions in the supply chain. This is why, for example, CO_2-reduced aluminium and electricity from renewable energy are used.

The definition of CO_2-reduced aluminium

The CO_2-reduced aluminium used in the Macan caused fewer CO_2 emissions per kilogram in the manufacturing process than is the case with the average primary aluminium used in the EU. This is aluminium that has not been further processed into semi-finished products (e.g. sheets) or components.

The average CO_2 footprint of aluminium in the EU is calculated by European Aluminium, for example. According to European Aluminium's Environmental Profile Report for the European Aluminium Industry,

published in November 2024, the greenhouse gas potential of the average primary aluminium used in Europe is 9.7 kg CO_2e/kg of aluminium.

CO_2e stands for CO_2 equivalents – a unit of measurement used to standardise the climate impact of different greenhouse gases. To reduce complexity, the term 'CO_2' is used on the model page.

Use of CO_2-reduced aluminium in the Macan

For the Macan, Porsche requires direct suppliers of selected components use CO_2-reduced aluminium. The frame of the high-voltage battery is an example of this. For a large portion of the aluminium used (over 50kg), the CO_2 footprint of the component has been reduced by approximately 59%, from the average of 9.7 kg CO_2e/kg of aluminium used in Europe to 4.0 kg CO_2e/kg of aluminium.

The wheels available for the Macan are another example. Through the use of CO_2-reduced primary and secondary aluminium, the expected greenhouse gas potential of aluminium used for the wheel variants has been reduced to an average below 4.0 kg CO_2e/kg of aluminium.

Use of electricity from renewable energy

A key change lever for reducing CO_2 emissions in the supply chain is the use of electricity from renewable energy.

High-voltage battery cell production is one of the processes with particularly high electricity requirements. That is why Porsche has obliged its direct supplier of high-voltage battery cells to solely use electricity from renewable energy.

Production

Porsche reduces CO_2 emissions during production of the Macan in Leipzig by using electricity from 100% renewable energy and largely meeting heating requirements with renewable energy.

The Porsche production plant in Leipzig has only been using electricity from renewable energy since 2017. To achieve this, Porsche has been using its own photovoltaic systems since 2021, with a total output of almost 10 MW peak load, among other solutions. The required heat is mostly generated through biomass and balanced biomethane. In 2024, these made up over 90%. Balanced biomethane means that a quantity of gas withdrawn from the gas network corresponds to the quantity of biomethane fed into the network at another point.

Use phase

Porsche is supporting the development of wind and solar energy plants to cover the expected electricity demand of the Macan fleet based on a driving distance of 200,000 km at WLTP consumption.

With every new all-electric vehicle, additional electricity requirements arise due to charging during the use phase. To meet this demand, Porsche is supporting the creation of new wind and solar capacities. The energy this generates is fed into power grids.

Porsche aims to use a model-based approach to cover the increased demand for renewable energy that is expected to be triggered by the growing all-electric Macan fleet. To achieve this, the expansion of wind and solar power capacity in the electricity supply networks of global regions (Europe, USA, China) is being supported – ensuring that this capacity is of sufficient size to cover the model-based energy consumption of the Macan new vehicle fleet.

The exact generation capacity of wind and solar energy plants depends on the weather (wind and sun radiation). To estimate the expected generation capacity, Porsche uses the average expected value of the system output supported by Porsche. This indicates the amount of electricity the system can exceed or fall short of with a likelihood of 50%. Porsche makes a financial contribution to the expansion of the required capacity of wind and solar plants by entering into ten-year contracts with the system builder and/or operator in collaboration with other companies from the Volkswagen Group. In the contracts, Porsche commits to paying a fixed amount for each unit of energy produced, thereby increasing the planning certainty for the system operator and contributing proportionally to the financing of the new plant. In return, Porsche acquires the certificates of origin (EACs: Energy Attribute Certificates) for the electricity fed into the grid and its 'ecological properties'. Invalidating the certificates prevents double usage and double marketing by third parties.

The calculation of the model-based expected electricity demand

For vehicles in Europe, China, and the USA, region-specific average consumption values are calculated for the main market regions (EU+3 (Iceland, Norway, UK), USA, China) based on an assumed mileage of 200,000 km per vehicle over ten years. The consumption values are determined according to the legally prescribed test cycle. For vehicles produced for other regions in the world, a volume-weighted average consumption value of the main markets is used. The assumed mileage of 200,000 km is based on the recommendation of the VDA guideline 900-100.

The procedure is audited for Porsche annually by an independent expert.

Recycling

Porsche strives for responsible and resource-conserving use of raw materials as well as long-term use of vehicles and the components used in them.

Porsche, for example, has developed an in-depth repair concept for the Macan high-voltage battery that is available worldwide through Porsche Centres and partner workshops. If the battery needs to be repaired, errors can be diagnosed and defective components can be replaced. This also makes it possible, for example, to replace individual battery modules. These measures can enable the battery to be repaired in a more resource-saving and cost-efficient manner. This ensures that the raw materials used in the battery remain in use for a longer period.

Even at the end of the battery's life, Porsche places the highest priority on responsible management of these materials. To this end, Porsche Ventures, a wholly owned subsidiary, invested in the battery recycling scale-up cylib in May 2024. The innovative process developed by cylib allows for the recovery of approximately 90% of the high-voltage battery raw materials (weighted by mass for lithium, graphite, nickel, manganese, and cobalt). From 2027, cylib plans to recycle 30,000 tonnes of end-of-life batteries annually across all manufacturers in a new industrial facility.

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Consumption data

Macan Turbo (WLTP)*: Electrical consumption combined: 20.7 – 18.4 kWh/100 km; CO_2 emissions combined: 0 g/km; CO_2 class: A

Macan (WLTP)*: Electrical consumption combined: 19.4 – 16.8 kWh/100 km; CO_2 emissions combined: 0 g/km; CO_2 class: A

Macan 4 (WLTP)*: Electrical consumption combined: 20.5 – 17.8 kWh/100 km; CO_2 emissions combined: 0 g/km; CO_2 class: A

*Further information on the official fuel consumption and the official specific CO_2 emissions of new passenger cars can be found in the "Leitfaden über den Kraftstoffverbrauch, die CO_2-Emissionen und den Stromverbrauch neuer Personenkraftwagen" (Fuel Consumption, CO_2Emissions and Electricity Consumption Guide for New Passenger Cars), which is available free of charge at all sales outlets and from DAT (Deutsche Automobil Treuhand GmbH, Helmuth-Hirth-Str. 1, 73760 Ostfildern-Scharnhausen, www.dat.de).

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