



PORSCHE



Porsche Leipzig Factory

Press Kit

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The Porsche factory in Leipzig

The Porsche factory in Leipzig is now a major centre for electromobility

At the beginning of July 2018, the Supervisory Board of Porsche AG took the decision to produce the next generation of Macan at the Leipzig site, earmarking investment totalling more than 600 million euros over the next few years in order to extend the site. In addition to expanding capacity, the factory extension will make it possible, in future, for electric cars to be produced on the existing assembly line. The first model to roll off the line in Leipzig is scheduled to be the Macan, with fully electric drive based on Premium Platform Electric (PPE architecture). The foundation stone for the new body shop was laid in an official ceremony in March 2019. Axle pre-assembly will also be integrated during the course of the extension; this is expected to create more than 100 highly skilled jobs.

“The decision to produce the next generation of the Macan in Leipzig represents a huge vote of confidence in the employees there, and the factory extension also means Porsche will have a pivotal role in shaping electromobility in Saxony. It all means that Porsche will remain a forward-looking economic powerhouse in the region,” notes Gerd Rupp, Chairman of the Executive Board of Porsche Leipzig GmbH.

This is the fifth extension of the former assembly plant, which in 2014 had a body shop and paint shop added and thereby becoming a plant for full production of the first generation of Macan. The extension follows on from two expansion phases: back in 2004, Porsche added a separate manufacturing area for Carrera assembly, two years after production started. This was followed in 2009 by construction of a production hall and logistics centre for the first generation of the Panamera. From 2016, the fourth expansion phase came with the decision to move all production for the next Panamera generation to Leipzig, as well as the creation of an additional body shop and a quality centre at the site in Saxony.

A total of around 500 Macan compact SUV vehicles and Panamera sports car saloons are currently produced at the Leipzig factory every day. 1,270 Carrera GT cars were also built here as a limited edition between 2003 and 2006. The first model off the Leipzig line was the Porsche Cayenne, with a total of 738,503 units produced between 2002 and 2017.

Around 4,300 employees currently work at Porsche Leipzig. Since 2003, Porsche has trained automotive mechatronics engineers, industrial mechanics as well as mechatronics engineers and tool mechanics in collaboration with Porsche Werkzeugbau GmbH in Schwarzenberg. Porsche Leipzig also offers dual studies in mechanical engineering/production engineering in the context of a collaboration with the Baden-Württemberg Cooperative State University (DHBW), and every year, 30 young people successfully complete their training or dual studies at Porsche in Leipzig. 2017 saw the construction of a new training facility on the factory premises in Leipzig. Porsche offers all trainees a guaranteed job at the factory after successful completion of their studies.

Milestones in the factory's history

- 2000 Ground-breaking ceremony and first staff appointed
- 2001 Customer centre topping-out ceremony
- 2002 Opening of the Porsche Leipzig factory and start of Cayenne production
- 2003 Start of Carrera GT production
- 2004 First factory extension
- 2005 Production of the 100,000th Cayenne
- 2006 Factory extension for Panamera production
- 2008 500th employee appointed
- 2009 Start of Panamera production
- 2010 Start of second-generation Cayenne production

- 2011 Factory extension for Macan production
- 2012 Production of the 500,000th Porsche in Leipzig
- 2013 Start of Macan production
- 2014 Factory extension for second-generation Cayenne production
- 2015 Extended circuit opened
- 2016 Start of full, second-generation Cayenne production
- 2017 New training centre opened
- 2018 Macan model update
- 2019 Start of the fifth factory extension

Production in detail

How is a Porsche created?

Around 500 Porsche Macan and Panamera cars are built every day. Production takes place across the three lines of body shop, paint shop, and assembly.

Porsche Leipzig factory production is characterised by transparent processes and consistent application of lean production principles, paired with the permanent reduction of raw materials, resources, and production resources, as well as a continuous improvement process to maintain high quality standards.

At the start of the body shop line, the body is assembled in four large sections from the bottom up. First, the complete underbody is assembled. This station is effectively the car's birthplace, and where it is issued with its "birth certificate": a transponder with a specific identification code of all the car's details. Side panels and roof are then fitted onto the underbody. The third stop on the process chain adds doors, bonnet, and boot lid to the frame. At the end of the line there is an acceptance inspection of the car, during which inspectors carefully check joints, quality of the surface finish and gap dimensions. If all quality requirements are met, the car moves onto the paint shop.

Cars show their true colours in the paint shop: the body passes through six phases in the paint shop. To start with, it is cleaned, degreased and dipped in a zinc phosphate solution to ensure proper adhesion of the corrosion protection that is subsequently applied in a process called cathodic dip coating. This process involves dipping the entire body into a tank of electrically conductive water-based dipping paint, wherein the car body itself is used as a cathode. With an application of 380 volts DC to the counter electrode, the solid particles in the paint are deposited onto the body's surface by electrophoretic deposition, and adhere to it to form a continuous, even coating. Welding seams and flanges are then sealed using special PVC materials, and the welding seams on the doors, bonnet and boot lid are sealed to prevent water ingress. An underbody seal is applied and only then is paint actually applied to the body: primer, base coat, and a clear finishing coat. The elastic primer protects the base coat against damage, as well as improving structure and subsequent lustre. The base coat is applied next, in the colour requested by the customer. Once that has dried, a clear coat finish is applied to seal

the paint layers. The final inspection takes place in a special light tunnel fitted with energy-saving, flexible LED strips. The strip lighting is projected onto the body using continuously adjustable mirrors. Inspectors pinpoint even the tiniest flaws, which are then corrected.

Final assembly: in this final production section, the doors are removed to be completed on a separate line, while the interior is fitted into the body in a process that combines industrial assembly and manufacturing. After the interior has been installed, the assembled car moves to a new means of transport: up to this point, a lifting station has been used, but it is now replaced by an overhead rotation unit that is used when fitting the brakes and fuel tank, enabling ergonomic working conditions for the fitters. The car moves through the exterior line next, on a lifting station again – this one with adjustable height to facilitate ergonomic working. For example, the exterior line handles fitting of the windscreen, rear window, main headlights, and seats. It is also where the doors are refitted and the famous Porsche badge attached. The next step brings the biggest moment in a car's assembly: the marriage. Marriage is the term used to describe the fully automated process where the body is joined to the finished driveline. After the engine wiring harness is fitted, the final stages are taken care of on the final assembly line – such as filling with fuel, brake fluid, coolant, and screen wash. The wheels are also fitted at this point. The final assembly cycles consist of starting, testing, and a last inspection of the car. Following a test drive, final acceptance testing is performed, and the car leaves the assembly plant. Key quality assurance steps include the audit, during which cars of all models are randomly subjected to a more in-depth inspection. The cars are delivered around the world, with 75 per cent of cars from the Porsche Leipzig factory transported by rail – powered exclusively by renewable energy to help protect the environment.

Logistics

Dictating the production cycle

High-performance and extremely efficient logistics are crucial to the success of Porsche Leipzig, as they set the production pace. There is a huge logistical challenge in managing the extremely wide variety of vehicle configurations, and providing the right material for the right car in exactly the right place and time. Annual production in the Porsche Leipzig factory has increased more than sixfold since August 2002. The variety of products assembled has also increased as a result of the factory's expansion, as well as the production mix and increasing individualisation. The new Porsche logistics concept was devised to meet these exact challenges, and to optimise the logistics system operated by the Porsche factory in Leipzig.

Assembly line production is based on just-in-time production (JIT), with just-in-sequence (JIS) operating as an advanced JIT concept; these organisational and management concepts are aimed at supplying assembly lines according to need. A coordinated production and material flow throughout the supply chain allows each part to be brought to the assembly line in sequence and on time. A consistent, coordinated order sequence ensures that only parts which can be fitted immediately are delivered according to the line cycle.

In particular, the inbound concept is being reshaped as part of the new Porsche logistics concept. Utilisation of trucks can be increased by moving away from local forwarders for factory supplies and towards direct transport, leading to a reduction in freight traffic. At the same time, warehouse capacities are increased by, for example, implementing an automated small parts warehouse (AKL). This warehouse provides Euro containers for tugger trains, and is differentiated from conventional AKLs by the shuttle technology used: around 100 shuttles ensure high availability levels, and as they each have their own drive systems their energy consumption is reduced by more than 30 per cent compared to an AKL using stacker cranes. Driverless transport vehicles (FTF) are the final piece in the concept puzzle. These function autonomously and carry sequence trolleys with just-in-sequence modules directly to the line.

Warehouse capacity and automation are also enhanced by dynamic picking, which fills picking trolleys for the assembly line, and improves working conditions for employees thanks to shorter picking routes. The high-density picking zone contains a conveying section with shuttle technology at a height of four metres, designed to transport bins to the rack aisle and empty bins back to the delivery station. Booking in and out of the warehouse is done automatically after bins are transferred from the forklift to the line.

Sustainability

Towards a zero-impact factory

Since it was founded in 2000, the Porsche Leipzig factory has been one of the world's most advanced and sustainable automotive manufacturing facilities. The German Sustainable Building Council (DGNB) presented its highest award – the Platinum certificate – to Porsche Leipzig in May 2019, recognising it as an exceptionally sustainable industrial site following an assessment on the basis of 167 criteria, in 28 categories. The elements analysed by DGNB included environmental protection, biodiversity and energy lifecycle assessments, how resources are handled, how the site has been set up, its effects on the local urban environment and infrastructure, ecological support during the construction phase, assessments of the lifecycle costs and stability of the facility's value, as well as associated plans and processes. DGNB awarded a particularly high score in the energy management lifecycle assessment and the site's ability to change.

"We stand by the climate protection targets agreed in Paris in December 2015 and have a clear responsibility to cut environmentally harmful emissions. Our aim in terms of sustainability goes far beyond mere decarbonisation, as our long-term vision is that of a zero-impact factory – in other words, a factory that makes no impact on the environment," explains Albrecht Reimold, Member of the Executive Board for Production and Logistics at Porsche AG.

Production in Leipzig is fully powered by renewable energy sources. This includes energy from photovoltaic plants totalling 4,380 megawatt hours per year, supplying a portion of the energy requirement for the Macan and Panamera bodies. A biomass plant in the direct vicinity of the factory meets the heat requirement of the state-of-the-art paint shop, as part of a process that is 80 per cent CO₂-neutral. Since 2015, energy efficiency measures have saved a total of 23.3 gigawatt hours of power.

The paint shop uses a rock-meal filter system as part of a dry separator to collect unavoidable paint overspray. Compared with a water-based system, it reduces energy use by up to 60 per cent. As there are no fluorescent tubes in the paint shop's Ergo-Lux tunnel, which is used for inspecting the body's surface finish, the energy requirement falls by 50 per cent due to the highly efficient LED lighting used in the area.

In line with the “Green Logistics” concept, Porsche powers its rail transport operations with renewable energy, increasingly uses electric logistics vehicles, and has set up energy-efficient shuttle technology at the new, automated small parts warehouse. Compared with conventional small parts warehouses, this facility saves 676 tonnes of CO₂ annually.

The Panamera body shop uses new, energy-efficient joining technologies such as flow-drilling screws, which can pierce sheet metal without the need to drill holes. All robotics and production system programming have been implemented with energy efficiency in mind. In particular, this applies to the use of servopneumatic solutions for welding guns: selected components now operate without any compressed air, which helps to reduce energy consumption. Each year, power consumption in the Macan body shop is reduced by more than 365,000 kilowatt hours through the use of cutting-edge cooling systems on the robotic welding guns with heat recovery.

Sustainability also relates to employee health. Ergonomics is a key aspect of occupational health, and it aims to optimise work-related strains. The range of issues that need to be addressed depend on the job at hand – load handling is typical in body shop work; while in assembly work, advice is widely sought in relation to finger strength and posture-related ergonomics. Measures include ergonomic assembly seats for working on underbodies and seated work stations to take the strain off the shoulder-neck area and the knee. A number of pilot trials conducted by Porsche Leipzig have also resulted in ergonomic handling devices being developed in-house, including a thumb orthosis for stabilising the thumb when pushing in plugs and clips. The use of exoskeletons is another new feature of vehicle production. This support system, currently in the test phase, is designed to physically assist operators working on elevated assembly lines – in other words those performing overhead work – by reducing the amount of holding work the operator’s arms are required to do.

Commitment

Commitment to the region

Porsche is committed to Leipzig and the region. This commitment can be seen in five areas: sport, education and science, culture, environment, and social projects.

With regard to sport, we have been working closely on projects with Bundesliga club RB Leipzig since 2014. New footballing talent has been nurtured under the “Turbo for Talents” projects. Other projects include the local Leipzig Quarter-Final tournament for young football fanatics, support for the RB Leipzig football academy, and sponsorship of an award for the best RB Leipzig youth team as the Porsche Talent Team.

Porsche also supports young talent in education and science: since 2001, the Porsche VDI GaraGe technology centre has provided young people with a valuable insight into automotive technology as part of the Porsche Student Workshop.

On the cultural side, Porsche is a committed global partner for tours and concerts held by the Leipzig Gewandhaus Orchestra, and is the main sponsor of the extremely popular Klassik Airleben series of open-air concerts that are staged at Rosental Park in Leipzig. Porsche has also been the official host of the Leipzig Opera Ball since 2013. First prize for the annual charity tombola, all proceeds from which go to the Leipzig hilft Kindern foundation, is also sponsored by Porsche.

The sports car manufacturer is heavily involved in many social projects: since 2005, Porsche Leipzig has staged a charity football tournament featuring teams from different regional companies coming together to compete for a good cause. The proceeds from the tournament go to benefit social projects. Beyond this, Porsche donates to charitable projects in Leipzig and the surrounding areas, especially to those that provide support to children in the region.

Back in 2002, Porsche embraced and implemented a unique grazing idea for its 132-hectare off-road site in Leipzig. Today, the site is home to 75 aurochs, 25 Exmoor ponies, three million honey bees, and a diverse mix of wildlife, including amphibians, bats, deer, and badgers. Porsche has produced its own

Turbiennen® honey on the site since 2017. The Porsche commitment to the environment also covers environmental education. Since 2018, children, school groups, and families have enjoyed the Porsche Safari, exploring four kilometres of footpaths under the guidance of environmental educators supplied courtesy of Auwaldstation Leipzig. Along the way, they discover fascinating facts about the life and habits of the off-road residents.

Customer

Customer centre and circuits

The customer centre in the Porsche Leipzig factory is the location for a wide variety of events of all shapes and sizes held on the factory site itself. Each year, around 40,000 visitors come to the customer centre for events, tours, and factory collections.

The customer centre itself is spread over five levels: the ground floor contains the reception area, Porsche shop, and the Motorsport Lounge with direct access onto the test circuit. In addition, there is a separate workshop and garages where vehicle handovers take place for those who collect their cars from the factory. These visitors are welcomed in the glazed Porsche Lounge on the first floor. Moving up a level, we find meeting rooms and the Forum, a conference room for up to 80 attendees. The test circuit control centre is also housed here. Conventions, conferences and gala events for several hundred guests can be held in the Porsche Auditorium on the third floor, which is also home to a restaurant with panoramic views onto the test circuit. On the fourth floor, we find an exhibition area with an ever-changing cast of Porsche cars.

Around 1,800 factory collections take place at the Porsche plant in Leipzig each year. Factory collection is available for all Porsche models. At these collections, customers are treated to a factory tour, an exclusive lunch in the customer centre restaurant, and an interactive introduction to their vehicle by means of an identical car on the test circuit. The company's own test circuit lies directly alongside the customer centre. The circuit is 3.7 kilometres long, twelve metres wide, and includes six straight sections with six braking points. It meets the requirements of a professional race circuit for motorsport events, and is certified by the Fédération Internationale de l'Automobile (FIA). The circuit is based on a design by Hermann Tilke, racing driver and designer of several Formula 1 circuits, including those in Malaysia or Bahrain. The test circuit is extended by a 2.2-kilometre-long dynamic loop containing a dynamic section exceeding 150 metres in length, and a 120-metre-wide skid pan, both of which can be wetted. This is ideal for conducting vehicle handling training at different speeds and in different conditions, or for testing the brakes to their full extent.

The six-kilometre-long test circuit is located on the 132-hectare off-road site. It runs through a former military training area which served as a drill ground for the Imperial German Army, the Reichswehr; and the Wehrmacht from 1899; and was used after the Second World War by the Soviet Army and the National People's Army of the GDR – the circuit snakes through terrain that was subsequently returned to nature. The preserved bunkers today form part of the off-road training course. Drivers face 15 terrain sections in total, encompassing a 100-metre long and 0.5-metre-deep ditch, and an extreme ramp with an 80 per cent gradient – a gruelling test of off-road capability for the Porsche Macan and Cayenne in a range of extreme conditions.

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