

Media Information

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BMW Group to deploy humanoid robots in production in Germany for the first time

+++ BMW Group bringing Physical AI to Europe +++ Pilot project at BMW Group Plant Leipzig +++ New "Center of Competence for Physical AI in Production" accelerates global integration of AI and robotics in production +++ First pilot deployment of humanoid robots successfully completed at BMW Group Plant Spartanburg, USA +++

Munich. The BMW Group is consistently advancing the digitalisation and use of artificial intelligence in production. A key element in this effort is "Physical AI", which combines digital artificial intelligence (AI) with real machines and robots. This enables intelligent systems such as humanoid robots to be integrated into real-world production processes.

For the first time, the BMW Group is now bringing Physical AI to Europe and launching a pilot project with humanoid robots at the Leipzig plant. The project aims to integrate humanoid robotics into existing series production of cars and to explore further applications in the production of batteries and components.

"Digitalisation improves the competitiveness of our production – here in Europe and worldwide. The symbiosis of engineering expertise and artificial intelligence opens up entirely new possibilities in production," said Milan Nedeljković, Member of the Board of Management of BMW AG, Production.

Last year, the BMW Group successfully implemented a pilot project with humanoid robots at its Spartanburg plant in the United States. The insights gained from this project are being leveraged to further develop and scale Physical AI applications.

Unified IT and data model in the production system

Artificial intelligence is already an integral part of the BMW Group's production system. From the virtual factory with digital twins and AI-enabled quality controls to intralogistics with autonomous transport solutions, intelligent systems are used in almost all production steps.

A prerequisite for the effective use of artificial intelligence in production is a unified IT and data model across the entire production system. The BMW Group has consistently transformed isolated data silos into a unified data platform in its production system meaning that all data is consistent, standardised, and available at all times. This enables digital AI agents to take on increasingly challenging tasks autonomously and in complex environments while continuously learning and becoming available for additional areas of application. The introduction of intelligent and autonomous decision-making agents marks a paradigm shift in production. In combination with robots, these digital AI agents are what make up Physical AI.

"Our aim is to be a technology leader and to integrate new technologies into production at an early stage. Pilot projects help us to test and further develop the use of Physical AI – that is, AI-enabled robots capable of learning – under real-world industrial conditions," said Michael Nikolaides, Senior Vice President Production Network, Supply Chain Management at BMW Group.

Digitalisation and artificial intelligence are core elements of BMW iFACTORY and are the foundation for future-proof, flexible, and competitive production.

Humanoid robotics complements existing automation

The BMW Group is strategically expanding its automation portfolio to include Physical AI and humanoid robotics. Humanoid robots are viewed as a value-adding complement to existing automation. Particularly, they demonstrate

potential in monotonous, ergonomically demanding, or safety-critical tasks. The goal is to relieve employees and further improve working conditions.

Center of Competence for Physical AI in Production consolidates expertise

Its consistent data platform in production makes the BMW Group an attractive partner for technology companies seeking to test the possibilities of Physical AI – particularly humanoid robotics – in an industrial environment under real-world conditions. By setting up the new “Center of Competence for Physical AI in Production”, the BMW Group is taking the next step in consolidating its expertise and ensuring that the full range of knowledge can be leveraged across the organisation.

The BMW Group is following a clearly structured approach. Technology partners are evaluated according to defined maturity and industrialisation criteria and tested in pilot projects under real-world production conditions. Following a theoretical assessment, an evaluation is carried out at the manufacturer's site in the laboratory using real use cases from the BMW production system to test integration capability. If this phase is successful, it is followed by an initial test deployment under real-world production conditions at a BMW Group plant and subsequently the actual pilot phase.

First pilot project with humanoid robots in Europe

In collaboration with Hexagon, a long-standing, established partner of the BMW Group in the field of sensor technology and software, the first pilot project in Europe is now underway. Hexagon's organisational unit located in Zürich, Hexagon Robotics, specialises in Physical AI and presented its first humanoid robot, AEON, in June 2025. Following an initial theoretical evaluation phase and successful laboratory tests, there was an initial test deployment at BMW Group Plant Leipzig in December 2025. A further test deployment is planned from April 2026 to ensure full integration for the actual pilot phase starting in summer 2026.

The deployment in Leipzig is focusing on testing a multifunctional application of the robot. It is based on AEON's design, whose human-like body allows a wide range of hand and gripper elements or scanning tools to be flexibly attached and enables dynamic use on wheels. During testing and later in the pilot phase, the robot will be used in the assembly of high-voltage batteries and in component manufacturing.

Successful pilot at BMW Group Plant Spartanburg provides key insights for use of humanoid robots in production

The world's first deployment of humanoid robots at a BMW Group plant took place at the Spartanburg plant in the United States in 2025, in collaboration with the technology company Figure AI. The results demonstrated that Physical AI can deliver measurable added value under real-world conditions. Within ten months, the robot Figure 02 supported the production of more than 30,000 BMW X3, working ten-hour shifts daily from Monday to Friday. Figure 02 handled the precise removal and positioning of sheet metal parts for the welding process – a task that is particularly demanding in terms of speed and accuracy while also being physically exhausting. In total, it moved more than 90,000 components and covered approximately 1.2 million steps in around 1,250 operating hours.

The pilot confirmed that humanoid robots can safely perform precise, repetitive work steps – such as positioning components with millimetre precision – and provided important insights for the further deployment of Physical AI in production.

During the initial test phases with Figure 02, it was essential to involve all areas of the production IT infrastructure, occupational safety, production process management, and shop floor logistics at an early stage.

One key finding was that the transition from the laboratory to the actual production environment was faster than expected. Motion sequences trained in the laboratory could be quickly transferred into stable shift operation. To ensure smooth coexistence with existing systems, integration into the BMW Smart Robotics ecosystem was implemented via standardised interfaces.

The body shop was deliberately selected for the test phase in Spartanburg, as it already has a high degree of automation. BMW Group employees in this area have extensive experience in integrating new technologies and processes. For example, material supply on the line is already carried out almost exclusively via automated smart transport robots (STR). The project team's early communication ensured transparency from the outset and promoted acceptance. The deployment of humanoid robots was met with great interest among employees and quickly became a natural part of everyday work during the course of the project.

The BMW Group and Figure are currently evaluating additional use cases for deploying the Figure 03 robot.

Additional quotes for use:**Michael Nikolaides, Senior Vice President Production Network, Supply Chain Management at BMW Group:**

"Our aim is to be a technology leader and to integrate new technologies into production at an early stage. Pilot projects help us to test and further develop the use of Physical AI – that is, AI-enabled robots capable of learning – under real-world industrial conditions. The successful first deployment of humanoid robots at our BMW Group plant in Spartanburg in the USA proves that a humanoid robot can function not only under controlled laboratory conditions but also in an existing automotive manufacturing environment."

Michael Ströbel, Head of Process Management and Digitalisation, Order to Delivery at BMW Group:

"We are delighted to deploy a humanoid robot for the first time in a pilot project at a plant in Germany. Following evaluation by our Center of Competence for Physical AI in Production, tests were carried out in the laboratory and at Plant Leipzig at the end of last year. This year, our focus is on step-by-step integration into our production system to explore a wide range of applications. The emphasis is on researching multifunctional use of the robot in various production areas such as battery manufacturing for energy modules and component production for exterior parts. With Hexagon, we have found a proven long-standing partner with a highly innovative approach to humanoid robotics for this project."

Felix Haeckel, Team Lead CoC Physical AI for Production:

"At our new Center of Competence for Physical AI in Production, we are pooling our expertise to make knowledge on AI and robotics widely usable within the company. In recent years, we have built up an international team of experts that, in addition to in-house research and programming, is dedicated to the gradual integration of AI into the existing production system. At the same time, our team in Munich is driving its own robotics research to set up, support, and further develop pilot projects in the field of Physical AI at our plants."

Arnaud Robert, President of Hexagon Robotics:

"We are very pleased to be working with the BMW Group to advance the use of humanoid robots in real-world environments."

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The BMW Group

With its four brands BMW, MINI, Rolls-Royce and BMW Motorrad, the BMW Group is the world's leading premium manufacturer of automobiles and motorcycles and also provides premium financial services. The BMW Group production network comprises over 30 production sites worldwide; the company has a global sales net-work in more than 140 countries.

In 2024, the BMW Group sold over 2.45 million passenger vehicles and more than 210,000 motorcycles worldwide. The profit before tax in the financial year 2024 was € 11.0 billion on revenues amounting to € 142.4 billion. As of 31 December 2024, the BMW Group had a workforce of 159,104 employees.

The economic success of the BMW Group has always been based on long-term thinking and responsible action. Sustainability is a key element of the BMW Group's corporate strategy and covers all products from the supply chain and production to the end of their useful life.

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Hexagon is the global leader in measurement technologies. We provide the confidence that vital industries rely on to build, navigate, and innovate. From microns to Mars, our solutions ensure productivity, quality, safety, and sustainability in everything from manufacturing and construction to mining and autonomous systems. Hexagon (Nasdaq Stockholm: HEXA B) has approximately 24,800 employees in 50 countries and net sales of approximately 5.4bn EUR.

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