Audi scales up deployment of artificial intelligence in production

- **The automaker controls production systems via a large cloud instead of stationary factory computers at scale**
- **Gerd Walker, Board Member for Production: “Artificial intelligence is a quantum leap for efficiency in our production. With our AI and digitalization roadmap, we are transforming our plants into smart factories where AI acts as a partner, providing our employees with tailored support.”**
- **Partnerships with institutions such as IPAI Heilbronn complement Audi’s innovation strength**

Ingolstadt/Neckarsulm, January 27, 2026 – Audi is consistently rolling out artificial intelligence (AI) in production and logistics: the company is scaling up its own cloud platform for production and introducing new AI use cases and technologies for large-scale series production. In doing so, the premium manufacturer is relying on the expertise of strong partners. Decades of manufacturing expertise meet smart digital solutions.

“Artificial intelligence is a quantum leap for efficiency in our production. With our AI and digitalization roadmap, we are transforming our plants into smart factories where AI acts as a partner, providing our employees with tailored support. The first AI-controlled robots are taking over tasks that are ergonomically strenuous, and chatbots are providing additional relief,“ explains Gerd Walker, Member of the Board of Management for Production and Logistics at Audi. “We are bringing together Audi’s decades of production expertise, our own innovative strength, and the expertise of strong partners such as the Innovation Park Artificial Intelligence (IPAI) in Heilbronn.”

Edge Cloud 4 Production forms the foundation

Audi is putting the **Edge Cloud 4 Production (EC4P)** into operation across its production environment. In doing so, the company is setting the next benchmark in fully networked factory automation and at the same time laying the foundation for the widespread use of AI in production. EC4P makes it possible to combine conventional automation technology with flexibility and computing power from the cloud. This allows Audi to simplify processes, reduce the amount of hardware required on site, and introduce new functions more quickly. That makes processes more stable, reduces maintenance costs, and increases IT security.

In vehicle assembly at German plants, for example, worker guidance is increasingly being controlled centrally from the cloud: employees on the production line receive information such as vehicles' specifications or regional versions from a central source in real time. The move to the cloud has already eliminated the need for more than 1,000 industrial PCs.

In the body shop for the A5 and A6 series in Neckarsulm, Germany, EC4P is now being used in a highly automated production environment for large-scale series production for the first time.

Virtual programmable logic controllers (vPLC) are replacing local hardware controllers on the production lines. Industrial devices, including around 100 robots, work together via the EC4P with millisecond precision. The EC4P meets the highest requirements for a smooth production process, enabling several hundred vehicle bodies to be manufactured every day in three shifts – a benchmark that is unique in the industry to date.

AI supports employees and ensures quality

The **Weld Splatter Detection (WSD)** system will also run on the EC4P in the future, enabling even greater flexibility and scalability. At Audi's Neckarsulm site, WSD detects weld splatter on the underbody of a car body and marks it with light. Thanks to a recent upgrade, a robot arm has taken over grinding them down – a physically demanding job. The Volkswagen Group's first AI-supported weld spatter detection system will soon go into series production at six plants in Ingolstadt.

Audi is also developing **ProcessGuardAIn**, its own AI solution for monitoring manufacturing processes. This was made possible by a team of Audi data experts who have built up the cross-plant "P-Data Engine" platform over the past few years. The platform combines various system and plant data from production at a uniform quality level. Thanks to this database, data scientists at Audi can quickly and efficiently develop and scale AI applications – such as ProcessGuardAIn. The AI solution bundles decades of expert knowledge as well as plant and process data in a standardized, scalable modular system that can be used across the Volkswagen Group.

Based on machine and sensor data, ProcessGuardAIn already monitors production steps in real time, detects anomalies at an early stage, and informs the experts. The pilot phase for two use cases is currently ongoing at the Neckarsulm paint shop: **dosage optimization in pretreatment** and **anomaly detection in cathodic dip coating (CDC)**. Introduction into series production is planned for the second quarter of 2026. Early fault detection simplifies manual work steps and reduces follow-up costs.

In the next stages of development, ProcessGuardAIn will provide data-based recommendations for action and guide employees step by step through the solution via an app. In the future, ProcessGuardAIn can serve as a central tool for predictive maintenance and quality assurance in all plants for monitoring all manufacturing processes.

Unique, forward-looking project: automated wiring loom installation

In the **Next20EM** project, Audi is working with ten partners at its Ingolstadt, Germany, headquarters to demonstrate how the production and assembly of a wiring loom can be completely digitized and automated – from the supplier to installation in the factory. To date, less than ten percent of wiring loom production and assembly is automated across the industry.

A demonstrator funded by the Federal Ministry for Economic Affairs and Energy has been created in Ingolstadt that maps the entire process chain: from wiring loom production and pre-assembly in the center console with automation-compatible connectors to automated installation in the vehicle – controlled by a central system. The benefits for Audi are considerable: less logistical effort and significantly shorter lead times for changes – minutes instead of weeks. The next step is to incorporate the knowledge gained into the large-scale production of future vehicle projects.

First IPAI cooperation: AI-based dryer operation in the paint shop

Audi is testing the first application from an IPAI cooperation in series production at its Neckarsulm site with AI-supported dryer operation. The AI model on which the application is based comes from another industry. Through cooperation and exchange within the IPAI, experts have identified the potential for Audi. Various controllers that regulate the temperature and air volume in the longitudinal dryer are currently being connected to the AI system. This allows for a faster response to even the smallest changes in production line speed in order to make the drying process as resource-efficient as possible. Audi will be testing how much energy can be saved as a result until summer 2026. The AI-supported system is a joint project developed by Audi, appliedAI initiative, and CVET GmbH.

Working in an innovative environment

On its path to data-driven production, Audi is relying on a combination of its own know-how and the expertise of strong partners from industry and science.

Within the company, around 60 experts in the Audi Production Lab (P-Lab) and the P-Data Factory are driving new technologies forward—from the initial idea to large-scale production.

Together with Broadcom, Cisco, and Siemens, Audi is implementing the interaction between virtualization platform, network, and automation technology as part of EC4P. In addition, the company has been an active partner in the IPAI in Heilbronn, the European hotspot for applied AI, since 2023. These collaborations provide access to the latest developments, start-ups, and talent—and accelerate the transfer of innovations into series production. “Together with our partners, we are setting standards for the data-driven production of the future: decisively and responsibly,” said Walker.

Clear rules for AI and the use of data

In its Code of Conduct, which is binding for all employees, and in a policy statement on artificial intelligence, Audi is committed to the responsible use of AI as a key technology of our time. The three guiding principles of respect, security, and transparency are intended to help exploit the potential of AI, protect the company and its employees, and respect the rights of users. In addition, the Data Sharing Code of Practice ensures that data is handled in accordance with the company's values.

Cross-plant collaboration on AI and digitalization

When it comes to various AI use cases, the Audi production network relies on scaling and intensive sharing:

- The Audi Hungaria team systematically assesses its value chain to identify potential for digitalization. From planning and manufacturing to quality assurance, AI is making production processes at the plant in Győr, Hungary, more transparent and efficient.
- At Audi México, management uses the AI-supported “Production Reports” tool to display key figures in real time and to make decisions based on precise, up-to-date operating data from the San José Chiapa plant.

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The Audi Group is one of the most successful manufacturers of automobiles and motorcycles in the premium and luxury segment. The brands Audi, Bentley, Lamborghini, and Ducati produce at 22 locations in 13 countries. Audi and its partners are present in more than 100 markets worldwide.

In 2024, the Audi Group delivered 1.7 million Audi vehicles, 10,643 Bentley vehicles, 10,687 Lamborghini vehicles, and 54,495 Ducati motorcycles to customers. In the 2024 fiscal year, Audi Group achieved a total revenue of €64.5 billion and an operating profit of €3.9 billion. As of December 31, more than 88,000 people worked for the Audi Group, more than 55,000 of them at AUDI AG in Germany. With its attractive brands and numerous new models, the group is systematically pursuing its path toward becoming a provider of sustainable, fully networked premium mobility.