BMW GROUP

Corporate Communications

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Artificial intelligence as a quality booster

+++ Pilot project "GenAI4Q" at BMW Group Plant Regensburg: AI system developed for tailored quality checks in vehicle assembly +++ Learning-based analysis tool enables customised quality inspections in any situation +++

Regensburg. Can artificial intelligence (AI) make quality control in vehicle production more efficient, faster and more reliable? A software solution developed at BMW Group Plant Regensburg as part of the "GenAI4Q" pilot project is making this a reality. At its core is an AI that delivers tailored inspection recommendations for the approximately 1,400 vehicles manufactured each day.

"The use of artificial intelligence supports the digital transformation of BMW Group production towards an intelligently connected factory – for example, we are using AI for quality control in vehicle assembly. In this way, we are optimizing our production processes and creating added value for our products and, ultimately, for our customers" says Armin Ebner, head of BMW Group Plant Regensburg.

BMW vehicles meet the highest standards of product quality. To ensure this, Plant Regensburg conducts numerous quality tests throughout the production process. Shortly before leaving the plant, vehicles undergo a final inspection: Trained specialists examine each finished vehicle once more to ensure it meets premium quality standards.

A new vehicle rolls off the Regensburg assembly line every 57 seconds. Each vehicle is built to individual customer specifications for the global market. Different types of drive trains are flexibly manufactured on one production line

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– ranging from vehicles with internal combustion engines to plug-in hybrids and fully-electric models, as well as countless model and equipment variants. Virtually no two vehicles are alike. "Our AI tool generates an individual inspection catalogue for each specific customer vehicle," explains Rüdiger Römich, responsible for Test Floor and Finish in Regensburg's vehicle assembly.

The AI analyses vast amounts of data to create these custom specifications. This includes not only vehicle data, such as model and equipment variant, but also real-time production data for each specific vehicle. By recognising patterns and correlations, the AI system quickly and automatically determines the scope of the inspection and organises it intelligently, in the right order, within a smartphone app. Römich: "Intuitive usability makes it easy to record findings. Employees can also access additional functions when needed – for example, a microphone icon in the app activates voice recording." The AI also manages speech recognition and transcription using standardised coding.

AI-based quality inspection was developed at BMW Group Plant Regensburg in collaboration with Munich startup Datagon AI.

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BMW Group Plants Regensburg and Wackersdorf

The BMW Group vehicle plant in Regensburg has been in operation since 1986 and is one of more than 30 BMW Group production locations worldwide. Every workday, around 1,400 vehicles of the BMW X1 and BMW X2 models roll off the production line at Plant Regensburg, destined for customers around the globe. Different types of drive trains are flexibly manufactured on a single production line – ranging from vehicles with internal combustion engines to plug-in hybrids and fully-electric models.

BMW Group Plant Regensburg was recognised as "FACTORY OF THE YEAR" 2024 in the category "excellent large-series assembly" of the prestigious industrial competition. As it implements the so-called BMW iFACTORY, the BMW Group is focused on digitalisation of the Regensburg plant site to create a digital and intelligently connected factory. It is already possible to experience in virtual form what the factory will look like a few years from now. Production of models for the NEUE KLASSE, BMW's next generation of vehicles, will ramp up in Regensburg in the second half of the decade.

The BMW Group plant in Wackersdorf is home to cockpit production and parts supply for overseas plants. With the opening of a new battery testing centre and commissioning of the first phase in autumn 2024, the location is also a key facilitator for electromobility. An entirely new area of expertise is the door and flap centre for Rolls-Royce.

The BMW Group core staff at the Regensburg and Wackersdorf locations in eastern Bavaria consists of around 9,250 employees, including about 350 apprentices.