

Media Information
29 October 2024

Intelligently connected factory: BMW Group Plant Regensburg drives digitalisation and automation of logistics with cloud-based traffic control system

+++ Sophisticated plant logistics with 50 tugger trains and 140 Smart Transport Robots handle around 10,000 trips daily, delivering parts to production +++ Intelligent connectivity through cloud-based traffic control system ensures optimal route guidance and on-time provisioning of parts to assembly line according to delivery priority +++

Regensburg. Digital, automated and intelligently connected through the cloud: BMW Group Plant Regensburg is advancing the digitalisation and automation of its logistics – as a further milestone on the road to the digital factory of the future, the BMW iFACTORY. Every 57 seconds, a new vehicle rolls off the assembly line. Each one is unique, built to individual customer preferences from thousands of separate components. Every workday, up to 1,400 BMW X1 and BMW X2 vehicles are dispatched to customers worldwide, including classic combustion-engine vehicles, plug-in hybrids and fully-electric models.

The logistics behind this process are extremely complex: The components and individual parts required for production always need to be in the right place in the plant's vehicle assembly at the right time – delivered "just in time" and in the correct order, "just in sequence" – to create individually customised vehicles for customers. At the BMW Group site in Regensburg, this logistical task, which is essential for efficient production, is primarily handled by driverless, automated or autonomous transport systems that are intelligently connected through a cloud-based traffic control system known as BMW Automated Transport Services (ATS). In some cases, loading and unloading of transport vehicles is also fully automated.

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Depending on the transport task, various types of driverless vehicles are used. For example, automated tugger trains transport small parts from the warehouse to the assembly line, while larger components weighing up to a tonne are handled by Smart Transport Robots (STR). These flat transport robots, developed by the BMW Group in collaboration with the Fraunhofer Institute for Material Flow and Logistics (IML) about ten years ago, now operate autonomously using dedicated AI modules. Relying on sensors and software, the devices recognise their surroundings, allowing them to navigate around obstacles independently when oncoming traffic permits.

The transport devices are managed through the central cloud-based BMW traffic control system, ATS. When it is time to replenish supplies, an employee on the assembly line rotates the change frame with the empty parts containers and uses it to operate a so-called retrieval rocker. The control system then receives the signal indicating that new parts need to be delivered. In this way, the control system enables smooth and precisely timed delivery of materials, as well as maintaining intelligent traffic flow in the assembly hall. It also provides optimal route guidance, based on delivery priorities, and ensures transport devices are sensibly parked and their batteries sufficiently charged.

BMW Group Plant Regensburg currently enables intelligent connection between nearly 50 automated tugger trains and more than 140 Smart Transport Robots through the ATS control system. The fleet comprises both automated and autonomous devices from different manufacturers, handling approximately 10,000 part deliveries each workday.

"What makes this so unique are the many sequenced parts specifically tailored to each customer vehicle. They must all be delivered in the order they are installed on the assembly line. Even a brief system failure in the supply of sequenced parts would bring production to a halt – and, of course, that is something we want to avoid," says Thomas Dietz, responsible for process improvement and quality management for Physical Logistics. "A lot of detailed work on both hardware and software was needed to reach the current status."

The existing fleet is continuously being expanded to incorporate additional transport routes and vehicles. Plans are also in place to integrate additional types of autonomous vehicles into the control system, step by step, such as autonomous lifting trucks or automated forklifts. "Our vision of intelligently connected logistics, relying on a variety of different autonomous transport systems that seamlessly interact with one another – from small to extremely large – is gradually taking shape," says Dietz.

The driverless logistics fleet is already being complemented by a recently commissioned autonomous transport vehicle in the Regensburg press shop with a payload capacity of 55 tonnes.

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Cell phone: +49 151 6060 2014, Email: Saskia.Graser@bmw.deMedia website: www.press.bmwgroup.comEmail: presse@bmw.de**The BMW Group**

The BMW Group has viewed itself for decades as the benchmark for production technology and operational excellence in vehicle construction – including at its locations in 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. A total of up to 1,400 vehicles of the BMW X1 and BMW X2 models come off the production line at Plant Regensburg every workday – destined for customers all over the world. Different types of drive trains are flexibly manufactured on a single production line – from vehicles with internal combustion engines to plug-in hybrids, to fully-electric models.

High-voltage batteries for the electric models built in Regensburg are also produced locally, in direct proximity to the vehicle plant. They are assembled at the electric component production facility, which opened in 2021 at the Leibnizstrasse location.

BMW Innovation Park Wackersdorf also belongs to the Regensburg site. The 55-hectare campus built in the 1980s was originally intended as a nuclear reprocessing facility. The BMW Group has located its cockpit production there, as well as its parts supply for overseas plants. In addition to BMW as the largest employer, several other companies are also based at Innovation Park Wackersdorf. A total of around 2,500 employees work there. The BMW Group core staff at the Regensburg and Wackersdorf locations in eastern Bavaria is made up of around 9,250 employees, including more than 300 apprentices.

www.bmwgroup-werke.com/regensburg/de.html