

Media Information  
27 September 2021

## **Smart plant logistics: Automated transport systems for outdoor use**

Outdoor tugger trains, car box and car trailer piloted in outdoor areas at Plant Dingolfing

**Dingolfing.** At BMW Group Plant Dingolfing, automated transport systems have long been an essential part of plant operations: From autonomous tugger trains to smart transport robots to car forklifts – rollout of these innovative vehicles is well underway, and they have already become a common sight in production halls. “Due to the wide variety of models we have here in Dingolfing, from the BMW 4 Series to the fully-electric BMW iX, our assembly logistics currently handles different articles and part” explains Armin Feser, head of Physical Logistics at BMW Group Plant Dingolfing. “Automated transport systems help us manage this complexity and organise our logistics processes at the plant more efficiently.”

After using these innovative vehicles indoors, the next step is to deploy automated transport systems in areas outside the production halls. Pilot projects have been running on the plant grounds for several weeks – with two automated outdoor tugger trains, a so-called car box and a car trailer.

Peter Kiermaier is responsible for logistics planning and industrialisation of logistics innovations at Plant Dingolfing. He firmly believes these vehicles have potential for the future, but also describes the unique challenges of using them outdoors: “On the one hand, because of the weather, we have far more disruptive and influencing factors, so we need more robust sensors and systems. On the other, we also need vehicles and systems that can communicate and interact effectively with each another.”

He says protecting other road users, such as pedestrians and cyclists, is top priority and requires the innovative vehicle to be integrated into the existing traffic control system.

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As part of the AC Log (Autonomous & Connected Logistics) research project, plans call for the car trailer and car box to be connected to 5G, so they can communicate with the existing BMW standard control system.

Specifically, two different outdoor tugger train models are currently being piloted: The first is a tugger train built by Linde, with an integrated automation kit from Schiller and a traction of three tonnes, which is being used to transport door handles autonomously, without a driver, in covered open spaces. The second model, from French manufacturer Easymile, builds on lessons learned from vehicle technology for autonomous driving and is mainly being used to transport PHS sheet metal parts outdoors. The electric hauler delivers up to 15 tonnes of traction and, with three trailers, reaches a length of over 16 metres and an automated speed of 10 km/h. It comes with a complex navigation system that uses GPS satellite navigation and Lidar technology to create a 3D image of the surroundings.

An automated, self-driving car box from Stäubli-WFT is also being piloted. With a footprint of 4.5 x 2 metres and a housing to protect transported goods from the weather, it is ideally equipped for outdoor use. The self-driving box moves special containers back and forth between locations where empty containers are stored and returned in the northern sector of Plant 02.40. "The product represents a further development of the previous indoor vehicle used at the Dingolfing Dynamics Centre 02.70. In the long run, we want to achieve greater flexibility by using different vehicle sizes and transport volumes," explains Dr Thomas Irrenhauser, head of Technology Development Innovation.

Another device from Stäubli-WFT, the car trailer, is currently in use at the Dynamics Centre (DYZ). In the near future, two automated car trailers will be deployed at this location to move containers arriving by rail to the docking gates for outgoing goods at the container yard, some 500 metres away,

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instead of tractor units. There, the container will be loaded with new parts, which are then transported back to the container yard by the car trailer, where they wait to be shipped.

**Captions**

Image 01: Linde tugger train from Schiller

Image 02: Tracteasy tugger train from French manufacturer Easymile



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Image 03: Self-driving car box from Stäubli-WFT



Image 04: Self-driving car trailers from Stäubli-WFT

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**BMW Group Plant Dingolfing**

Plant Dingolfing is one of the BMW Group's 31 global production sites and the company's largest European manufacturing facility. Around 1,500 BMW 4 Series, 5 Series, 6 Series, 7 Series and 8 Series cars, as well as the new fully-electric BMW iX, come off the production line at Plant 02.40 every day. In total, the plant manufactured around 232,000 vehicles in 2020.

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At present, around 17,000 people are employed at the site in Lower Bavaria. With more than 850 apprentices in 15 different occupations in addition to this, Dingolfing is also the BMW Group's largest training facility.

In addition to cars, vehicle components such as pressed parts and chassis and drive systems are also produced in Dingolfing. Component plant 02.20 is also home to the company-wide Competence Centre for E-Drive Production, which supplies the BMW Group's vehicle plants worldwide with electric motors and high-voltage batteries for production of plug-in hybrids and pure electric models. This e-drive production facility is currently undergoing massive expansion and will employ up to 2,000 people in the medium term.

The car bodies for all Rolls-Royce models are also built at the site. The so-called Dynamics Centre, a large storage and transshipment facility at the heart of the BMW Group's aftersales logistics, provides the global BMW and MINI retailer organisation with original parts and equipment.

**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 and mobility services. The BMW Group production network comprises 31 production and assembly facilities in 15 countries; the company has a global sales network in more than 140 countries.

In 2020, the BMW Group sold over 2.3 million passenger vehicles and more than 169,000 motorcycles worldwide. The profit before tax in the financial year 2020 was € 5.222 billion on revenues amounting to € 98.990 billion. As of 31 December 2020, the BMW Group had a workforce of 120,726 employees.

The success of the BMW Group has always been based on long-term thinking and responsible action. The company set its course for the future early on and is making sustainability and resource efficiency the focus of the company's strategic direction – from the supply chain, through production, to the end of the use phase, for all its products.

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