

Media Information
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BMW Group and NVIDIA take virtual factory planning to the next level

- The two industry leaders are revolutionising virtual planning and engineering for highly complex manufacturing systems
- Omniverse platform allows different applications to connect, with unrestricted compatibility
- Greatly enhancing the speed, precision and efficiency of the planning process

Munich. The BMW Group and NVIDIA are generating a completely new approach to planning highly complex manufacturing systems – with the Omniverse platform. The virtual factory planning tool integrates a range of planning data and applications and allows real-time collaboration with unrestricted compatibility. As industry leaders, the BMW Group and NVIDIA are setting new standards in virtual factory planning.

Milan Nedeljković, BMW AG Board Member for Production: “Together we’re about to make a huge leap forward and open up completely new perspectives in the field of virtual, digital planning. In the future a virtual representation of our production network will allow us to realise an innovative, integrated approach to our planning processes. Omniverse greatly enhances the precision, speed and consequently the efficiency of our planning processes.”

“BMW does personalized manufacturing at a massive scale - their operations are among the most complex in the world,” said Jensen Huang, founder and CEO of NVIDIA. “In their vision of future factories, people and robots work together, engineers from all aspects of factory design collaborate in a shared virtual space, and the entire factory is simulated with photorealistic detail. NVIDIA Omniverse was built to realize this future. I am delighted that BMW is using NVIDIA Omniverse to connect their teams to design, plan and operate their future factories virtually before anything is built in the physical world. This is the future of manufacturing.”

Virtual factory planning is already widespread, but until now it has required data to be imported from various applications. This is not only time-consuming but also raises compatibility issues. In addition, the data is not always up to date. In the future, the Omniverse platform will enable live data to be collected and collated from all the relevant databases to create a joint simulation – eliminating the need to reimport data. The goal is to enable modifications and adjustments to be assessed in the early stages of planning in order to create an overall view. This extreme transparency will allow planners and production specialists to plan highly complex production systems even more quickly and accurately, without interface losses or compatibility problems. Omniverse integrates data from various professional design and planning tools from a range of different producers and uses it to generate photo-realistic real-time simulations in a single collaborative setting.

Outstanding photorealistic quality is just one of the many benefits of Omniverse. Another is that employees at different sites in different time zones can access the virtual simulation and work together to plan and optimise details of a process or production system whenever they need to. In addition, Omniverse can be used in a multitude of applications: in the future, planners and production specialists will collaborate using real-time data that is synchronised in the Omniverse cloud infrastructure. They will also be able to discuss the integration of new production systems with suppliers. Omniverse allows structure and facility data to be integrated, as well as items and part numbers of materials in production. It can also be used for logistics planning, offering unprecedented data consistency, from planning through to production. “This is redefining collaboration,” emphasises Board Member for Production Milan Nedeljković. The ability to carry out changes live will speed up decision-making noticeably. Production planners at the BMW Group will be able to visualise the entire planning lifecycle for every plant in the global production network, accelerated by scalable GPU performance. This will be supported by a wide range of AI-capable

application cases, from autonomous robotics to predictive maintenance and data analysis.

The BMW Group and NVIDIA are long-standing partners. In a first pilot project, the US-based company fitted high-performance technologies and special AI control modules to logistics robots and to the BMW Group's self-developed autonomous transport robots (STR).

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The BMW Group production network

Uniquely flexible and highly efficient, the BMW Group production network is able to respond quickly to changing markets and regional sales fluctuations. Expertise in manufacturing is a key contributor to the BMW Group's profitability.

The BMW Group production network uses a range of innovative digital and Industry 4.0 (IoT) technologies, including virtual reality, artificial intelligence and 3D printing applications. Standardised processes and structures across the production system ensure consistent premium quality and allow a high degree of customisation.

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 the course for the future at an early stage and consistently makes



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sustainability and efficient resource management central to its strategic direction, from the supply chain through production to the end of the use phase of all products.

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