BMW Group Starts Global Rollout of NVIDIA Omniverse

Automaker brings power of industrial AI to its entire production network as part of its digital transformation.

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BMW Group is at the forefront of a key new manufacturing trend — going digital-first by using the virtual world to optimize layouts, robotics and logistics systems years before production really starts.

The automaker announced today with NVIDIA at GTC that it's expanding its use of the NVIDIA Omniverse platform for building and operating industrial metaverse applications across its production network around the world, including the planned electric vehicle plant in Debrecen, Hungary, that will only start operations in 2025.

In his GTC keynote, NVIDIA founder and CEO Jensen Huang shared a demo in which he was joined by BMW Group's Milan Nedeljkovi■, member of the board of management, to officially open the automaker's first entirely virtual factory, powered by NVIDIA Omniverse .

"We are excited and incredibly proud of the progress BMW has made with Omniverse. The partnership will continue to push the frontiers of virtual integration and virtual tooling for the next generation of smart-connected factories around the world," Huang said during the GTC keynote.

Omniverse — the culmination of over 25 years of NVIDIA graphics, accelerated computing, simulation and AI technologies — enables manufacturing companies to plan and optimize multibillion-dollar factory projects entirely virtually. This means they can get to production faster and operate more efficiently, improving time to market, digitalization and sustainability.

The keynote demo highlights a virtual planning session for BMW's Debrecen EV plant. With Omniverse, the BMW team can aggregate data into massive, high-performance models, connect their domain-specific software tools and enable multi-user live collaboration across locations. All of this is possible from any location, on any device.

Starting to work in the virtual factory two years before it opens enables the BMW Group to ensure smooth operation and optimal efficiency.

BMW Group's virtual Debrecen plant illustrates the power and agility of planning AI-driven industrial manufacturing plants with the Omniverse platform.

In the EV factory demo, Nedeljkovi■ invites Huang into an update in which the BMW team seeks to include a robot in a constrained floor space. The team solves the problem on the fly, with logistics and production planners able to visualize and decide the ideal placement.

"This is transformative — we can design, build and test completely in a virtual world," said Nedeljkovi■.

It's a lens into the future of BMW Group's journey into digital transformation. It's also a blueprint for reducing risks and ensuring success before committing to massive construction projects and capital expenditures.

This kind of digital transformation pays off. Putting in change orders and flow reoptimizations on existing facilities is extremely costly and causes production downtime. So having the ability to pre-optimize virtually eliminates such costs.

BMW Group's production network is poised to benefit from the digital transformation opportunities brought by Omniverse.

With factories and factory planners all over the world, BMW has a complex planning process. The automaker uses many software tools and processes to connect people across geographies and time zones, which comes with limitations.

With Omniverse, a development platform based on Universal Scene Description (USD) , a 3D language that creates interoperability between software suites, BMW is able to bridge existing software and data repositories from leading industrial computer-aided design and engineering tools such as Siemens Process Simulate, Autodesk Revit, and Bentley Systems MicroStation.

With this unified view, BMW is powering its internal teams and external partners to collaborate and share knowledge and data from existing factories to help in the planning of new ones.

Additionally, the BMW team is developing a suite of custom applications with Omniverse, including a new application called Factory Explorer, based on Omniverse USD Composer , a customizable foundation application of the Omniverse platform. BMW used core components of USD Composer and added custom-built extensions tailored to its factory-planning teams' needs, including finding, constructing, navigating, and analyzing factory data.

The Omniverse platform enables BMW teams to collaborate across virtual factories from everywhere. A unified approach to data, allowing global changes in real time, lets BMW share updates across its teams.

With these new capabilities, BMW can now validate and test entirely in a virtual world, accelerating its time to production and improving efficiency across all of its plants.

To learn more about the latest in digitalization, watch NVIDIA founder and CEO Jensen Huang's GTC keynote and these sessions featuring speakers from BMW:

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Learn more about NVIDIA Omniverse

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