Powering the Future: Next Step in Siemens, NVIDIA Collaboration Showcased With FREYR Virtual Factory Demos

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At the Hannover Messe trade show this week, Siemens unveiled a digital model of next-generation FREYR Battery factories that was developed using NVIDIA technology.

The model was created in part to highlight a strategic partnership announced Monday by Siemens and FREYR, with Siemens becoming FREYR's preferred supplier in automation technology, enabling the Norway-based group to scale up production and maximize plant efficiency.

Built by Siemens, the demo uses the NVIDIA Omniverse development platform to provide an immersive experience of the FREYR factories and follows the joint vision for an industrial metaverse unveiled last year by Siemens and NVIDIA.

Displayed as part of an industrial metaverse experience in the Siemens booth during Hannover Messe 2023, the world's largest industrial technology trade show, the demos incorporate operational data from the FREYR factory in Norway.

Highlighting the integration between Siemens Xcelerator and NVIDIA Omniverse, the demo features 3D representations of the infrastructure, plant, machinery, equipment, human ergonomics, safety information, robots, automated guided vehicles, and detailed product and production simulations.

These technologies will help FREYR to meet surging demand for high-density, cost-effective battery cells for stationary energy storage, electric mobility and marine applications.

Amid growing worldwide sustainability initiatives and the rapid electrification of transportation, the battery industry is projected to grow to $400 billion by 2030 . Battery cell manufacturing is a critical step in the battery value chain, with manufacturers investing billions of dollars in new battery-cell plants to meet this new demand.

In the demo, Siemens shows a vision for how teams can harness comprehensive digital twins in the industrial metaverse using models of existing and future plants.

Within moments, FREYR can set up a meeting with potential investors or customers to take place within the digital FREYR plant in Norway and explore the facility's exterior before entering to view current production processes at work.

The striking interior flythrough instantly conveys the facility's size and scale. The real-time, physically accurate simulation shows how machines and robots inside the factory move, and can even simulate complex processes. Sensors capturing machine information allow real-time performance visualization and ergonomic assessments.

The demo also demonstrates how the model can be used for production planning, highlighting how a plant manager can rapidly evaluate plant performance using a custom Siemens application, which provides at a glance an overview of the facility's operation.

From there, the manager initiates a Microsoft Teams meeting with colleagues at a manufacturing "cell" — which places key people, machines and supplies in one strategic location — inside the virtual factory.

The team can then examine a robotic arm experiencing low-cycle-time issues, access machine performance data, identify specific cycle-time problems and view a live video stream with

accompanying sensor data on machine performance.

This showcase at Hannover Messe is only the beginning, as more industries embrace and implement the industrial metaverse.

Learn more about NVIDIA Omniverse and our partnership with Siemens.

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