SIEMENS

Press

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Siemens empowers Hirano to maximize quality and performance in battery manufacturing

- **Collaboration supports optimization and digitalization of battery manufacturing machines**
- **Hirano leverages Siemens' automation and Simcenter™ simulation software solutions from the Siemens Xcelerator open digital business platform**
- **Result: shorter machine implementation and commissioning times, enhanced product quality, and reduced waste material**

Siemens and Hirano Tecseed, a Japanese machine builder, are partnering to transform battery manufacturing processes. The collaboration focuses on the standardization and digitalization of battery coating machines to optimize coating processes, reduce waste and enhance product quality and operator performance.

The battery market is rapidly expanding due to the global shift toward sustainable energy, and especially with the growing importance of electric vehicles and utility-scale energy storage. Hirano and other machine builders are looking to increase battery production and reduce their costs while maintaining high levels of quality and safety. A crucial production step involves coating foil strips with multiple active layers to form the battery electrodes. Any defects in this process can negatively affect the performance and durability of the finished battery. Close monitoring and control of speed and tension during the coating process are essential.

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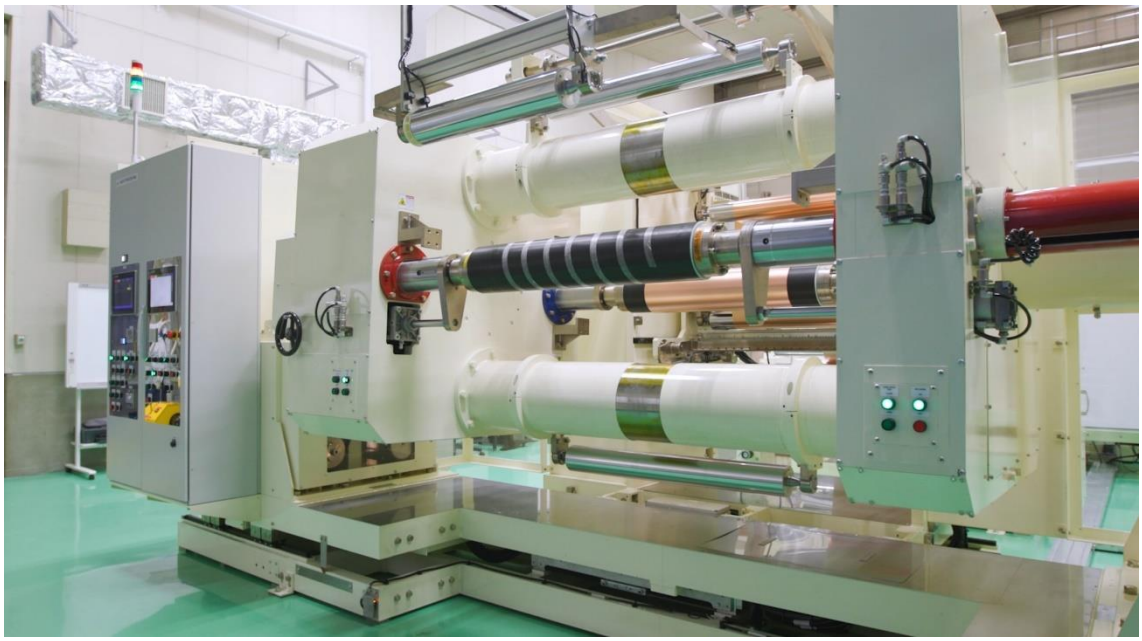


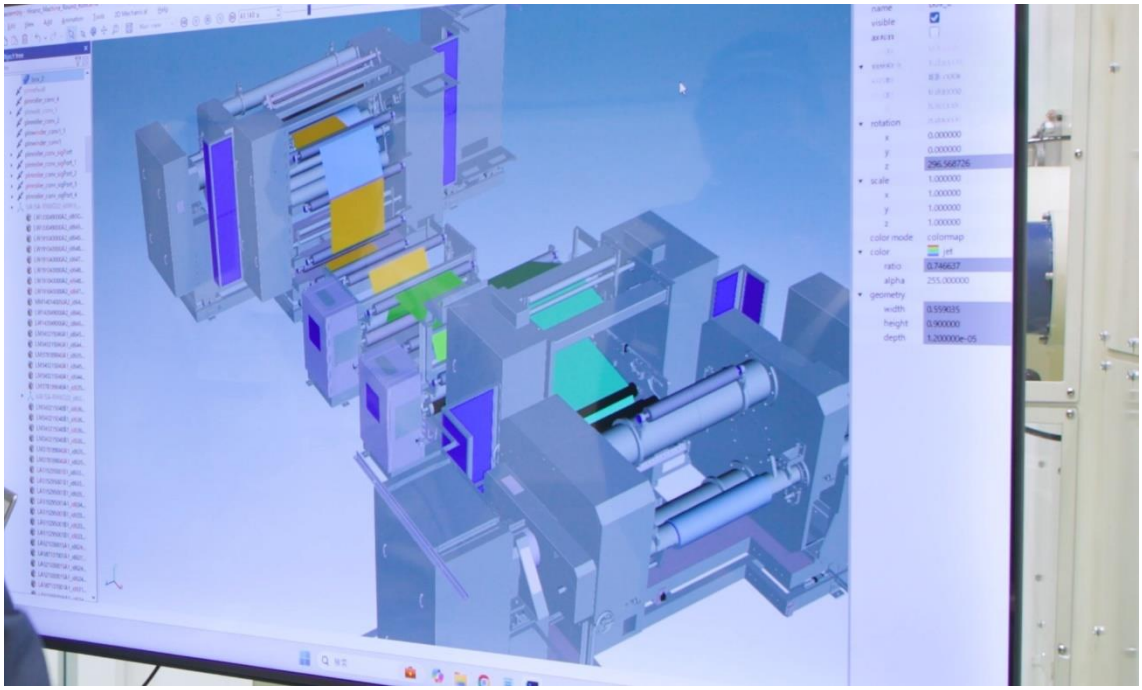
Siemens supports Hirano with the digitalization of its battery coating machines (Source: Hirano Tecseed)

A key component of the collaboration has been the development of a digital twin for battery manufacturing equipment. Using Siemens' Simcenter™ software, Hirano successfully simulated and tested a digital twin of its battery coating machine. Drawing on real-time data from a Simatic controller and Sinamics drives, which automate the pilot machine, the simulation provides a highly accurate virtual model for performance testing. By leveraging Simcenter™ Amesim™, a systems simulation software from the Siemens Xcelerator platform, Hirano's design engineers can virtually assess and optimize the machine's web handling system for maximum throughput.

In the past, parameters for Hirano's machines were set based on experience, which could lead to defective products due to incorrect settings. Using Siemens' comprehensive digital twin technology has enabled Hirano to configure and simulate a machine in a virtual environment before committing to physical production. This allows Hirano to significantly reduce the need for physical prototypes and predict potential product defects. Development engineers can evaluate and optimize machine settings five times faster in the virtual environment compared to physical operation. Additionally, up to 80 percent of the machine simulation and digital twin can be constructed using pre-configured, standard function blocks, resulting in shorter implementation and commissioning times, as well a reduction in development costs.

“We’re thrilled to collaborate with Siemens to enhance our battery manufacturing processes,” said Katsuhiro Omori, Director and Executive Officer of R&D at Hirano Tecseed. “Integrating mechatronics and automation simulation systems into a unified modeling environment has significantly helped Hirano identify potential product defects and advance our machine process optimization in a virtual setting.”

“By leveraging our advanced simulation and automation technologies, Siemens is enabling Hirano to achieve unprecedented levels of efficiency and quality in battery manufacturing,” added Michael Thomas, Senior Vice President of Factory Automation and Head of Production Machines at Siemens. “This partnership exemplifies our commitment to driving innovation and supporting our customers in their digital transformation journey.”



Using Siemens’ Simcenter™ software, Hirano successfully simulated and tested a digital twin of a battery coating machine (Source: Hirano Tecseed)

This press release and press images are available at https://sie.ag/6FYZF

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