

The background of the advertisement features a large, detailed industrial robotic arm on the left side, rendered in a dark, metallic blue. To its right, several other robotic arms are shown in a lighter, semi-transparent blue, appearing as if they are virtual or simulated versions of the physical one. The floor is a dark, textured surface with a perspective that leads towards the horizon. The overall color scheme is dark blue and black, with white and light blue text and highlights.

SIEMENS

Ingenuity for life

Siemens Digital Industries Software

Embrace the Power of Virtual Commissioning

Test and tweak your machine
before it exists physically with **Siemens
Advanced Machinery Engineering**

[siemens.com/plm/advancedmachinery](https://www.siemens.com/plm/advancedmachinery)

Trend #1

Consumer driven customization requires highly flexible machines



Trend #2

Smart machines are intelligently connected machines via the Internet of Things (IoT)



Trend #3

Hyperautomation, a combination of multiple machine learning, packaged software and automation tools



Trend #4

Global competitive pressures from new, low cost providers has never been higher



Complexity, Customization and Connectivity

The complexity of today's markets forces you as machine engineering company to evolve from traditional "physical" product engineering to **simulation-driven, digital product design**.

Consumers will increasingly demand a packaged system of integrated products and services that is customized to meet their individual needs.

Your customers have to respond to complexity created by consumer demands with **extremely flexible, connected and adaptable machines**, which in turn requires machinery that supports efficiencies gained through hyperautomation **and smart connected machines via the Internet of Things (IoT)**.

Technology innovation leaders must adopt a **mindset around new practices that embraces perpetual change**. The change may be incremental or radical, and may be applied to existing or new business models and technologies.

Are you prepared for the challenge?

Key drivers



Consumers' increasing customization demands

Smart connect machines via (IoT)

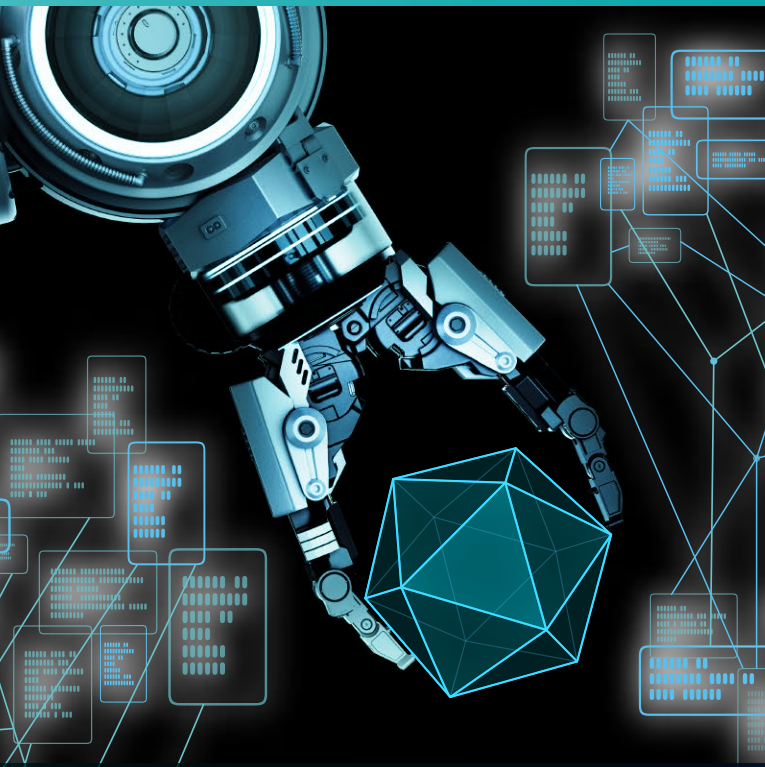


Extend efficiencies with Hyperautomation

Global collaboration
Global competition



Be successful in the highly complex and dynamic machine engineering market with **Virtual Commissioning**, a powerful solution that is breeding the leaders in your industry



Siemens offers a complete and holistic framework to help you cope with the challenges of today's machine engineering market.

Virtual Commissioning by **Siemens** Advanced Machine Engineering

Advanced Machine Engineering focuses on ensuring a significantly better performance in the development of next-generation machines.

Digital twins allow greater design flexibility, multi-disciplinary collaboration enables you to build smart, connected machines, a comprehensive Bill of Materials gives you advanced capabilities for nearly limit-less options and variants and advanced machine builder support throughout the entire product life.

And it also reduces your time to market through **Virtual Design and Commissioning**.

The result is **better upfront validation, shorter commissioning time and more immediate productivity**.

This will help you to **lead innovation in highly competitive global markets**.

Early validation to boost innovation

The trends we outlined above offer **huge opportunities**, but also **serious challenges** for machine manufacturers who have to build machines that are every day smarter, more connected and more flexible.

As software is driving machines, its **complexity is increasing** significantly. It is essential to simulate the code running on a machine's virtual twin to generate substantial dividends in time and resources.

This increasing complexity calls for **smarter software solutions**, too, and one of these smart solutions is virtual commissioning.

Virtual machine simulation and commissioning allow you to **validate and verify your machinery or entire production plant in the virtual world before deploying it on the factory floor**.

50% faster time to production

25% Shorter commissioning phase

Capitalize on digitalization and connectivity to thrive in the machine engineering industry with Virtual Commissioning

Smart Software Validation with Virtual Commissioning

Virtual commissioning **validates the software code** for programmable logic controllers (PLCs), human-machine interfaces (HMI) and supervisory control and data acquisition (SCADA) equipment, an integral part of the modular product development strategy.

You can **virtually test and tweak every minor detail or major change** to machines you are developing, or to operative machines, with the help of their digital twins.



"We are very pleased with the discrete event simulation capabilities we have developed in Eisenmann throughout the years, especially our use of Plant Simulation,"

Sebastiano Sardo, senior vice president,
Eisenmann Conveyor Systems.

Virtual commissioning is ideal for turning a machine on before it exists physically and performing real commissioning, and this means early validation in much less time, using less human and material resources and integrating all engineering domains as well as your customers in the development process.

This integrated approach pays enormous dividends for machine engineering companies like you.

The Xcelerator portfolio in Siemens Digital Industries Software suite of products provides a full suite of solutions to empower machine builders and suppliers with the essential tools to thrive in their highly competitive market and transition seamlessly to create tomorrow's machinery today.



"By working on the design, mechanical components and programming simultaneously, we can drastically reduce the time to market. In another project, this approach allowed us to save about 20% or two months,"

Erik Hjertaas, Tronrud Engineering.

Virtual Commissioning in a Nutshell

Essentials:

- Upfront automation linked to machine behavior,
- Behavior model drives code generation,
- Closed-loop feedback visualization,
- User experience implementation.

Benefits:

- Significant increase in speed to market,
- Substantial cost savings compared to physical testing and commissioning,
- Minimized risks as problems can be detected and solved early in the process.

Challenges:

- Third-party equipment and tools integration,
- Robotic integrations,
- Logistics automation.

What can you do?

Empower your customers to thrive in their markets, provide the capability to digitalize their entire design and manufacturing processes the same way you have done it.

Consider the implementation of a digital Bill of Materials platform. This will enable you to trace the digital twin from creation through manufacturing and **improve the collaboration between domains, suppliers and customers, reducing errors and improving quality.**

All this will considerably **reduce the complexity and time-to-market** of creating and implementing new machinery, giving you a nearly **unfair advantage over your competitors.**

About Siemens Advanced Machine Engineering

Siemens Advanced Machine Engineering is driving transformation to encourage advanced machinery creation, where engineering, manufacturing and electronics design meet tomorrow.

Our solutions help companies of all sizes create and leverage digital twins that provide organizations with new insights, opportunities and levels of automation to drive innovation.

For more information on Siemens Advanced Machine Engineering, visit [siemens.com/plm/advancedmachinery](https://www.siemens.com/plm/advancedmachinery) or follow us on [LinkedIn](#), [Twitter](#), [Facebook](#) and [Instagram](#).

Siemens Digital Industries Software

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