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for all

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AI is revolutionizing manufacturing

Are you ready?

AI is helping to unlock new levels of efficiency, quality, and adaptability across production lines and supply chains. By leveraging AI as a part of your manufacturing technology stack, you can move from reactive to predictive operations—anticipating machine failures, optimizing energy use, and reducing waste. This shift to a data-driven model empowers businesses to not only improve productivity but also respond quicker to market demands.

The journey there requires a robust AI and data infrastructure that can process data where it's generated—in real time, and at the edge. Only then can AI, with the capability to automate and optimize, truly transform operations.

77%

of manufacturers
want to adopt AI to
achieve productivity
improvements.¹

How AI is advancing manufacturing—and driving innovation.



Quality control

Enhance defect detection and ensure consistent product quality with AI-powered visual inspections.



Employee safety

Monitor employee-machine interactions, ensuring adherence to safety protocols and reducing accident risk.



Supply chain and logistics

Improve handling of pallets and pieces, enhance delivery efficiency and optimize supply chain routes.



Demand forecasting

Leverage historical data, market trends, and economic indicators with Lenovo's time series forecasting model to predict demand for goods and services.



Inventory management

Streamline stock levels and reduce material waste through real-time tracking and demand forecasting.



Operational efficiency

Optimize production workflows, minimize downtime, and enhance equipment utilization with intelligent automation.



Predictive maintenance

Continuously monitor equipment and predict failures before they occur, minimizing unplanned downtime.



Customer Services

Provide exceptional support to internal and external stakeholders using an industry-specific large multimodal model.

The journey to digital transformation

Despite its vast potential, adopting smart manufacturing presents several challenges for organizations, from strategy and skills limitations to leadership and workforce resistance.

Top challenges hindering the implementation smart manufacturing

- Absence of a unified corporate strategy
- Adoption uncertainties
- Awareness & perception
- Outdated infrastructure
- Perceived complexity & cost
- Workforce resistance
- Skills gap
- Cybersecurity threats

Successful integration of smart manufacturing processes starts with purpose-built AI systems that minimize disruption and accelerate adoption. Unlike generic AI platforms, these solutions address the unique needs of manufacturers, such as real-time quality control, predictive maintenance, supply chain optimization, and adaptive production scheduling. By providing out-of-the-box functionality specifically engineered for manufacturing environments, these AI initiatives enable companies to quickly leverage advanced technologies without extensive customization or lengthy implementation periods.

Lenovo Smart Manufacturing solutions

In collaboration with Intel, Lenovo provides the devices, infrastructure, and services required to power AI-based solutions. From the production floor to warehouses and supply chain operations, Lenovo has the technology to transform operations across your entire ecosystem.



Lenovo ThinkStation P Series

Powered by Intel® Xeon® Scalable processors

Ideal for complex workloads like genAI and digital twin development

Lenovo ThinkPad X1 2-in-1

Powered by Intel® Core™ Ultra processors

Versatility plus AI-driven features that adapt to user preferences and improve efficiency



Lenovo ThinkPad X1 Carbon

Powered by Intel® Core™ Ultra processors

AI-driven features to automate tasks and enhance productivity effortlessly

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Seeing the big picture

Smart manufacturing requires a holistic, end-to-end approach that includes supply chain management to maximize efficiency and innovation. This holistic view enables real-time monitoring and data-driven decision-making, key principles of smart manufacturing. By integrating AI and real-time data alongside GenAI-enabled chatbots into the logistics system, smart manufacturing solutions can quickly respond to supply chain risks and meet customer demands for on-time delivery.

Step-by-step success

Lenovo's end-to-end smart manufacturing solutions, from consulting to infrastructure to services, ensure a smooth transition to getting the AI competitive edge.

Production line

- Lenovo Industrial Computer Vision
- Edge Cloud Collaboration
- Robotic Inspection
- Industrial AR
- Lenovo ESG Navigator
- Supply Chain Intelligence

Smart warehouse

- Asset Tracking
- Pick Assist Autonomous Mobile Robot
- Automated Storage & Retrieval Systems
- Warehouse Execution System
- Automatic Guided Forklift



Lenovo's AI-ready infrastructure delivers scalable, high-performance computing to support a wide range of AI applications, from advanced data analytics to real-time processing.

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Lenovo ThinkEdge

Powered by Intel® Xeon® Platinum processors

Ideal for compute-intensive and latency-sensitive manufacturing applications like predictive maintenance



Lenovo ThinkSystem

Powered by Intel® Xeon® Scalable processors

Optimized for deploying and training AI and models, accelerating AI and GenAI



Lenovo ThinkAgile

Powered by Intel® Xeon® Scalable processors

Pre-configured servers, storage, and networking to streamline AI adoption and deployment



Transition to smart manufacturing with confidence.

Smart manufacturing environments encounter various cyberthreats, such as malware infections, ransomware, DoS attacks, and supply chain vulnerabilities. Plus, the interconnected nature of these systems poses risks that can potentially disrupt the entire production chains.

Lenovo's data privacy and security portfolio offers robust capabilities to ensure data remains private and secure through on-premises solutions and multi-layered controls. Lenovo ThinkShield, along with Intel security features, safeguard trust in the smart manufacturing infrastructure with built-in security and compliance from supply chain to the processors to responsible hybrid AI approach.

25.7%

of all cyberattacks are in manufacturing, the most targeted sector for cyberattacks for three years in a row.²

Lenovo not only provides smart manufacturing solutions, we successfully use them.

As the world's No. 1 PC manufacturer by annual number of units shipped, we understand the challenges of orchestrating long and complex supply chains. From warehouse automation and sustainable manufacturing to improving operational efficiency, evolving supply chains, and deploying data-driven solutions, make Lenovo part of your technology strategy team, wherever you are on your journey.



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What can you do to prepare for next-gen manufacturing?

☐ Identify challenges & inefficiencies.

- Labor-intensive work: Take a fresh look at labor-intensive work to determine if AI can help make a difference on this process.
- Complex problems: You can handle the simple issues. Applying AI solutions to complex challenges maximizes your ROI.
- Build sustainable knowledge: Leverage AI to build long-term knowledge for the enterprise.

☐ Secure your data.

- How complete and clean are the datasets within your organization? With comprehensive and validated customer information, AI can be more actionable.
- Do you have an ocean of data but lack of data insights? AI can make sense of it all.
- There are various AI models that can be applied—which model or models are right for your business? Which is the best strategy for you—cloud, edge, on-device?
- Data security and data governance are priorities to be addressed before starting any AI projects. You will need technology providers to assist you in defining the right data governance models for AI projects.
- Who can access your data when using AI models? Stay in the know—and be in control.

☐ Pick the right technology partner.

- Identify a technology partner that leverages the internal and external AI ecosystem to create offerings, solutions, and services tailored to be outcome-based and high value.
- Wherever you are on your AI journey, your technology partner should meet you where you are and help you navigate forward.
- Experience a seamless transition with a partner that owns the entire customer journey when it comes to AI adoption, providing the process and tools needed for the journey.

Discover the transformative potential of AI in your manufacturing ecosystem with Lenovo and Intel®. **Get the report from Futurum—**and harness smarter AI for all.



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¹ Futurum Intelligence: CIO Insights Survey for Q1 2025

² World Economic Forum (2024)