Microsoft

AI Use Cases for Manufacturing

Modernize manufacturing operations with AI

In the manufacturing industry, efficiency and precision are the name of the game. Under the pressure of siloed systems and data, supply chain complexity, and sustainability demands, however, it's becoming harder for manufacturers to stay competitive.

That's where generative AI can help shift the momentum and, according to IDC, deliver 3.4x ROI for every $1* spent. And adoption across industries is only going to keep growing at a rapid pace: IDC reports that generative AI usage jumped from 55% in 2023 to 75% in 2024.

From speeding up product development to optimizing end-to-end processes, manufacturers can implement customized AI solutions to transform not just their businesses but the manufacturing industry altogether.

* $ refers to the US dollar (USD).
Source: IDC, sponsored by Microsoft, "2024 Business Opportunity of AI," IDC #US52699124, November 2024.

ACCELERATE PRODUCT DEVELOPMENT
through generative design

With real-time iterative product designs and computer-aided design (CAD) models powered by AI, engineering teams can automate design processes and quickly generate innovative solutions that meet performance, cost, and production requirements. And when they save time on manual iterations, they can focus on higher-value tasks like ensuring manufacturability and meeting regulatory standards.

Business outcomes
- Faster time to market
- Material optimization
- Reduced design costs

Solutions
- Azure OpenAI Service
- Microsoft 365 Copilot
- Microsoft Copilot Studio

Success stories
- Harting

STREAMLINE APPLICATION LIFECYCLE MANAGEMENT
with coding assistance

Software development teams spend a great deal of time writing and debugging code to ensure application quality and functionality. To speed up the development process and free their teams to focus more on creative problem solving, manufacturers can incorporate AI-assisted coding with PLC (programmable logic controller) software and connected products, tapping generative AI for real-time code suggestions, task automation, and faster error detection.

Business outcomes
- Faster time to market
- Reduced design costs
- Improved developer experience

Solutions
- Azure OpenAI Service
- GitHub Copilot
- Microsoft Copilot Studio

Success stories
- Schneider Electric

TRANSFORM FACTORY OPERATIONS
with clearer data visibility

Manufacturing relies on optimized and streamlined processes, which require data that's consistently accurate and up to date. Manufacturers can unify factory data with AI to predict equipment failures, reduce unnecessary downtime, and prevent defects that slow production. In turn, this shortens manufacturing cycles and ensures both higher-quality outputs—all while creating a more agile, innovative, and competitive operation.

Business outcomes
- Improved collaboration
- Enterprise-wide visibility
- Increased knowledge sharing

Solutions
- Manufacturing Data Solution and Factory Copilot template
- Microsoft Copilot Studio

Success stories
- IPG

SIMPLIFY MANUFACTURING BUSINESS PROCESSES
with enhanced knowledge discovery

Business functions across manufacturing enterprises can deploy the search, summarization, and speech capabilities of generative AI to boost productivity, reduce cognitive overload on teams, and streamline workflows. From sales to HR to research and development, employees can access the up-to-date information they need, when they need it.

Business outcomes
- More sales efficiency
- Increased knowledge sharing
- Boosted productivity

Solutions
- Azure OpenAI Service
- Microsoft 365 Copilot
- Microsoft 365 Copilot for Sales
- Microsoft Copilot Studio

Success stories
- Bayer

IMPROVE THE WORKER EXPERIENCE
with real-time insights

Manufacturers have historically faced challenges with frontline worker (FLW) retention, training, and upskilling—resulting in longer downtimes, lower fix rates, and FLW burnout. With AI, they can equip frontline workers with solutions that provide real-time data to improve decision-making, response times, and operational efficiency. Plus, becoming a digital-first workplace gives manufacturers a competitive edge in the market.

Business outcomes
- Improved fix rate
- Reduced equipment downtime
- Higher customer retention and revenue

Solutions
- Azure OpenAI Service
- Dynamics 365 Field Service
- Microsoft Copilot Studio

Success stories
- NetworkRail

For a deeper dive into how other industries are using AI, explore the AI Use Cases for Business Leaders e-book. Ready to kick-start your own AI transformation and move the manufacturing industry forward?

Get started with Microsoft Cloud for Manufacturing.