Artificial Intelligence in Manufacturing Market by Processor (MPUS, GPUs, FPGA, ASICs), Software (On-premises, Cloud), Technology (Machine Learning, NLP, Context-aware Computing, Computer Vision, Generative AI), Application - Global Forecast to 2030

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Report description:

With a CAGR of 35.3%, the global AI in manufacturing market is anticipated to rise from USD 34.18 billion in 2025 to USD 155.04 billion by 2030. This robust growth is being driven by the rapid adoption of AI technologies to streamline production workflows, enhance real-time decision making, and support predictive maintenance across diverse manufacturing operations. As manufacturers strive for greater agility, cost efficiency, and quality assurance, AI solutions are becoming instrumental in unlocking new levels of operational intelligence and productivity. Industries such as automotive, electronics, aerospace, and consumer goods are leveraging machine learning, computer vision, and natural language processing to optimize production scheduling, reduce downtime, and detect anomalies early in the process. The use of AI-enabled robots, digital twins, and intelligent quality control systems allows manufacturers to scale output with precision and adaptability. Additionally, AI integration with industrial IoT platforms and cloud-based data analytics accelerates the transition to smart factories by enabling connected, data-driven ecosystems. With growing emphasis on sustainability, customization, and global competitiveness, AI is set to play a transformative role in shaping next-generation manufacturing paradigms. As the demand for intelligent automation and continuous process innovation intensifies, the AI in manufacturing market is poised for sustained expansion across all regions and industry verticals.

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"By Application, Predictive Maintenance Segment Held the Largest Market Share in 2024."

In 2024, the predictive maintenance segment emerged as the leading application in the AI in manufacturing market, driven by the growing emphasis on minimizing equipment failures, reducing operational downtime, and optimizing asset performance. Manufacturers across industries increasingly adopted AI-powered predictive maintenance systems to analyze sensor data, detect anomalies, and forecast equipment failures before they occurred. This approach enabled timely and targeted interventions, helping companies avoid costly disruptions and improve overall production efficiency. Key sectors such as automotive, heavy machinery, energy & power, and semiconductor & electronics manufacturing prioritized predictive maintenance, particularly in high-volume and capital-intensive operations where unplanned outages could result in significant losses.
AI algorithms, integrated with IoT and cloud platforms, enabled real-time condition monitoring and intelligent diagnostics, offering a clear advantage over traditional reactive or time-based maintenance models. The widespread use of AI-driven insights to anticipate failures, optimize maintenance schedules, and reduce spare part wastage contributed significantly to the segment's dominance. Additionally, the return on investment from predictive maintenance through improved equipment uptime, extended asset life, and reduced labor costs made it a strategic priority for manufacturers. As factories continued to evolve toward smarter, data-centric operations, predictive maintenance firmly held its position as the most impactful AI application in the manufacturing sector in 2024.

"By Technology, the Machine Learning Segment Held the Largest Market Share."
In 2024, the machine learning segment accounted for the largest share of the AI in manufacturing market, reflecting its central role in enabling data-driven decision making, process optimization, and adaptive automation across the industry. Manufacturers increasingly relied on machine learning algorithms to analyze large volumes of operational data generated by sensors, machines, and enterprise systems, uncovering patterns and trends that traditional methods could not detect. This allowed companies to enhance production efficiency, improve quality control, and respond swiftly to changing market demands. Industries such as automotive, electronics, and metals & heavy machinery manufacturing have adopted machine learning to drive a range of applications, from demand forecasting and predictive maintenance to anomaly detection and process optimization. The technology's ability to continuously learn and refine models based on real-time data made it especially valuable in dynamic environments with complex operations and high variability. The integration of machine learning with industrial IoT platforms, cloud computing, and edge devices significantly expanded its use across both discrete and process manufacturing. The ability to automate decision-making, reduce human error, and uncover hidden inefficiencies reinforced machine learning's dominance as a foundational AI technology. As manufacturers pursued greater agility, scalability, and competitiveness, machine learning emerged as the most widely implemented and impactful technology within the AI in manufacturing landscape.

"By Region, Europe Recorded Significant Growth in the AI in Manufacturing Market During the Forecast Period."
Europe is expected to witness significant growth in the AI in manufacturing market, supported by a strong focus on industrial modernization, digital innovation, and automation-led competitiveness. Manufacturers will continue to embrace AI technologies to improve productivity, reduce operational inefficiencies, and meet evolving regulatory and sustainability standards.
Government-led initiatives across various European nations have played a significant role in accelerating AI integration within the manufacturing sector. Investments in research and development, along with supportive policies for smart factory development, have created a favorable environment for AI adoption.
Additionally, the presence of a highly skilled workforce, advanced industrial infrastructure, and well-established digital ecosystems has enabled faster deployment of AI solutions across the region. European manufacturers are increasingly leveraging AI to enhance production intelligence, implement real-time monitoring, and support autonomous decision-making. The emphasis on quality, precision, and traceability has further driven the demand for AI technologies that enable continuous improvement and adaptive control. As the region balances the goals of industrial innovation and environmental responsibility, AI adoption is expected to remain a key enabler of its manufacturing transformation, reinforcing Europe's position as a major contributor to the global AI in manufacturing market.
Breakdown of primaries
A variety of executives from key organizations operating in the AI in manufacturing market, including CEOs, marketing directors,

and innovation and technology directors, were interviewed in depth.
- By Company Type: Tier 1 - 45%, Tier 2 - 35%, and Tier 3 - 20%
- By Designation: Directors - 45%, C-level - 30%, and Others - 25%
- By Region: North America - 45%, Europe - 25%, Asia Pacific - 20%, and RoW - 10%

Note: Other designations include sales and product managers and project engineers. The three tiers of the companies are defined based on their total revenue in 2024: Tier 1 - revenue ? USD 1 billion; Tier 2 - revenue USD 100 million-USD 1 billion; and Tier 3 revenue < USD 100 million.

Major players profiled in this report are as follows:
Siemens (Germany), NVIDIA Corporation (US), IBM (US), Intel Corporation (US), GE Vernova (US), Google (US), Micron Technology, Inc (US), Microsoft (US), Amazon Web Services, Inc (US), Rockwell Automation (US), ABB (Switzerland), Honeywell International Inc. (US), Cisco Systems, Inc. (US), Hewlett Packard Enterprise Development LP (US), SAP SE (Germany), Mitsubishi Electric Corporation (Japan), Oracle (US), Dassault Systemes (France), Sight Machine (US), Progress Software Corporation (US), Aquant (US), Bright Machines, Inc. (US), Avathon, Inc. (US), and Zebra Technologies Corp. (US).

The study provides a detailed competitive analysis of these key players in the AI in manufacturing market, presenting their company profiles, most recent developments, and key market strategies.

Study Coverage
In this report, the AI in manufacturing market has been segmented based on offering, technology, application, industry, and region. The offering segment includes hardware, software, & services. The technology segment comprises machine learning, natural language processing, context-aware computing, computer vision, and generative AI. The application segment comprises inventory optimization, predictive maintenance & machinery inspection, production planning, field services, reclamation, quality control, cybersecurity, and industrial robots. The industry segment comprises semiconductor & electronics, energy & power, pharmaceuticals, automotive, metals & heavy machinery, food & beverages, and other industries. The market has been segmented into four regions ? North America, Asia Pacific, Europe, and Rest of the World (RoW).

Reasons to buy the report
The report will help the leaders/new entrants in this market with information on the closest approximations of the revenue numbers for the overall market and the sub-segments. It will also help stakeholders understand the competitive landscape and gain more insights to better position their businesses and plan suitable go-to-market strategies. The report also helps stakeholders understand the AI in manufacturing market's pulse and provides information on key market drivers, restraints, challenges, and opportunities.

Key Benefits of Buying the Report

? Analysis of key drivers (The proliferation of industrial IoT and connected devices is enabling seamless integration of AI across factory ecosystems. Data-driven decision making and process intelligence are becoming central to modern manufacturing strategies, allowing companies to uncover inefficiencies, optimize production schedules, and reduce variability through AI-powered insights. Enhanced human-machine collaboration, or augmented intelligence, is improving shop floor productivity by empowering workers with AI-assisted tools and systems), restraints (Data quality and availability challenges continue to limit the full potential of AI in manufacturing. The complexity in scaling AI from pilot projects to full-scale production environments presents a significant hurdle), opportunities (Increasing focus on remote operations is boosting the use of AI for real-time optimization and coordination across multiple manufacturing sites. Growing demand for personalized products is driving AI adoption to enable flexible, small-batch production tailored to individual customer needs), and challenges (Difficulty in managing real-time AI decision

feedback loops limits responsiveness and disrupts tightly synchronized production workflows. Frequent changes in materials, processes, or demand patterns challenge the ability to keep AI models updated, reducing their accuracy and long-term effectiveness in dynamic manufacturing environments) influencing the growth of the AI in manufacturing market is available in the report.

-□Product Development/Innovation: Detailed insights on upcoming technologies, research and development activities, new product launches in the AI in manufacturing market are available.

-□Market Development: Comprehensive information about lucrative markets - the report analyses the AI in manufacturing market across regions.

-□Market Diversification: Exhaustive information about new products/services, untapped geographies, recent developments, and investments in the AI in manufacturing market.

-□Competitive Assessment: In-depth assessment of market shares, growth strategies, and service offerings of leading players such as NVIDIA Corporation (US), IBM (US), Siemens (Germany), Intel Corporation (US), Amazon Web Services, Inc. (US), and others.

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