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Machine Vision Systems Market Forecasts to 2030 – Global Analysis By Product Type (PC-Based Machine Vision Systems and Smart Camera-Based Machine Vision Systems), Component (Hardware and Software), Technology (2D Machine Vision and 3D Machine Vision), Application, End User and By Geography

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Abstracts

According to Stratistics MRC, the Global Machine Vision Systems Market is accounted for $12.8 billion in 2024 and is expected to reach $21.2 billion by 2030 growing at a CAGR of 8.7% during the forecast period. Automated systems that analyze and interpret visual data from the surroundings using cameras, sensors, and software are known as machine vision systems. They are frequently used to guide robotic arms, inspect products, and find flaws in manufacturing and quality control. Real-time image processing by these systems enables high accuracy, speed, and precision in tasks like sorting, measurement, and object recognition. In many different industries, machine vision is essential for increasing output, decreasing errors, and boosting operational effectiveness.

According to Sony Semiconductor Solutions has announced plans to boost its CMOS image sensor production capacity by 60,000 wafers per month.

Market Dynamics:

Driver:

Increased demand for automation

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The growing emphasis on industrial automation across sectors such as manufacturing, automotive, and electronics drives the machine vision systems market. These systems enhance production efficiency by enabling real-time quality control, defect detection, and process optimization. The adoption of Industry 4.0 and smart factories further accelerates demand, as machine vision technologies reduce manual intervention, improve accuracy, and streamline workflows. With advancements in AI and deep learning, machine vision systems are increasingly integrated into robotics and IoT devices, making them indispensable for modern automated operations.

Restraint:

Limited skilled workforce

These advanced systems require expertise in programming, image processing, and system integration, which many manufacturing units lack. High training costs and the complexity of the technology further exacerbate this issue. Small#- #to medium-sized enterprises (SMEs) particularly struggle to adopt machine vision solutions due to limited resources for workforce development, slowing widespread adoption.

Opportunity:

Growth in the automotive industry

The expanding automotive sector presents lucrative opportunities for the machine vision systems market. These systems are integral to quality assurance processes such as assembly verification, defect detection, and component identification. The rise of electric vehicles (EVs) and autonomous driving technologies further boosts demand for advanced vision systems capable of ensuring precision manufacturing. Additionally, increased investments in smart manufacturing facilities by automotive companies drive the adoption of machine vision solutions.

Threat:

Competition from traditional inspection methods

Traditional inspection methods, such as manual quality checks or simpler automated systems, pose a threat to the adoption of advanced machine vision technologies. Many industries continue to rely on these methods due to their lower initial costs and ease of

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implementation. Resistance to change and concerns over the complexity of integrating new technologies also contribute to this challenge, limiting the growth potential of machine vision systems.

Covid-19 Impact:

The COVID-19 pandemic disrupted global supply chains and delayed manufacturing activities, initially hampering the machine vision market. However, the need for contactless operations during the crisis accelerated automation adoption in industries such as healthcare and logistics. Machine vision technologies were increasingly deployed for applications like remote monitoring and quality control in essential sectors. This shift highlighted the importance of automation resilience during disruptions, fostering long-term growth prospects for the market.

The pc-based machine vision systems segment is expected to be the largest during the forecast period

The pc-based machine vision systems segment is expected to account for the largest market share during the forecast period due to its superior processing capabilities and flexibility in handling complex tasks like defect detection and assembly verification. These systems are widely used in industries requiring high-speed data analysis and customization options. Their ability to integrate with existing production lines makes them a preferred choice for large-scale manufacturing operations. Continuous advancements in processing power and software capabilities further solidify their position as a leading segment in the market.

The software segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the software segment is predicted to witness the highest growth rate owing to advancements in AI-driven algorithms and deep learning technologies. These innovations enable more precise image processing and pattern recognition, expanding applications across industries such as healthcare, automotive, and electronics. The increasing demand for user-friendly interfaces and customizable solutions also drives software adoption. As industries prioritize smarter automation solutions, software emerges as a critical component for enhancing machine vision system performance.

Region with largest share:

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During the forecast period, the Asia Pacific region is expected to hold the largest market share due to its robust manufacturing base in countries like China, Japan, and South Korea. The region’s dominance is driven by extensive use of machine vision systems in electronics production, automotive assembly lines, and semiconductor manufacturing. Government initiatives promoting Industry 4.0 adoption further boost market growth. The presence of key players investing heavily in R&D ensures Asia Pacific remains at the forefront of technological advancements in machine vision.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR due to rapid industrialization and increasing automation adoption across emerging economies like India and Southeast Asia. Growing investments in smart factories and rising demand for quality control solutions drive regional growth. The expansion of industries such as automotive, electronics, and healthcare further accelerates demand for advanced machine vision systems in this region.

Key players in the market

Some of the key players in Machine Vision Systems Market include Allied Vision Technologies GmbH, Basler AG, Baumer Optronic GmbH, Canon Inc., Cognex Corporation, FLIR Systems Inc., Intel Corporation, IDS Imaging Development Systems GmbH, ISRA Vision AG, Keyence Corporation, National Instruments Corporation, Omron Corporation, Sick AG, Sony Corporation, Teledyne Technologies Inc., Texas Instruments Incorporated, TKH Group NV and Toshiba Corporation.

Key Developments:

In January 2025, SICK, an international provider of sensor-based automation solutions headquartered in Germany, and the Swiss measurement technology specialist Endress+Hauser are starting their strategic partnership for process automation. Both companies are joining forces to better support their customers and advance new technological solutions for the decarbonization of the process industry. Customers will now benefit from a broader product portfolio distributed from a single source via the global Endress+Hauser Sales Centers. The joint venture 'Endress+Hauser SICK GmbH+Co. KG' will strengthen the development and production of analyzer and gas flow meter technologies, expanding the solution offerings.

In April 2024, Cognex Corporation, the leader in industrial machine vision released the

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In-Sight® L38 3D Vision System, which combines AI, 2D, and 3D vision technologies to solve a range of inspection and measurement applications. The system creates unique projection images that combine 3D information into an easy-to-label 2D image for simplified training and reveals features not visible with traditional 2D imaging. AI tools detect variable or undefined features, while rule-based algorithms provide 3D measurements to deliver reliable inspection results.

Product Types Covered:

- PC-Based Machine Vision Systems
- Smart Camera-Based Machine Vision Systems

Components Covered:

- Hardware
- Software

Technologies Covered:

- 2D Machine Vision
- 3D Machine Vision

Applications Covered:

- Quality Assurance & Inspection
- Positioning & Guidance
- Identification & Recognition
- Measurement & Metrology

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End Users Covered:

- Electronics & Semiconductor
- Food & Beverages
- Logistics & Warehousing
- Pharmaceuticals & Chemicals
- Aerospace & Defense
- Industrial Manufacturing
- Automotive
- Other End Users

Regions Covered:

- North America
  - US
  - Canada
  - Mexico
- Europe
  - Germany
  - UK
  - Italy
  - France

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- Spain
- Rest of Europe

Asia Pacific

- Japan
- China
- India
- Australia
- New Zealand
- South Korea
- Rest of Asia Pacific

South America

- Argentina
- Brazil
- Chile
- Rest of South America

Middle East & Africa

- Saudi Arabia
- UAE
- Qatar
- South Africa

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Rest of Middle East & Africa

What our report offers:
- Market share assessments for the regional and country-level segments
- Strategic recommendations for the new entrants
- Covers Market data for the years 2022, 2023, 2024, 2026, and 2030
- Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)
- Strategic recommendations in key business segments based on the market estimations
- Competitive landscaping mapping the key common trends
- Company profiling with detailed strategies, financials, and recent developments
- Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

Company Profiling

Comprehensive profiling of additional market players (up to 3)

SWOT Analysis of key players (up to 3)

Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

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Contents

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11 KEY DEVELOPMENTS

12 COMPANY PROFILING

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List Of Tables

LIST OF TABLES

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Note: Tables for North America, Europe, APAC, South America, and Middle East & Africa Regions are also represented in the same manner as above.

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