SCOTTS INTERNATIONAL

Machine Vision Systems (MVS) - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2026 - 2031)

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Report description:

Machine Vision Systems (MVS) Market Analysis

The machine vision systems market is expected to grow from USD 13.95 billion in 2025 to USD 14.95 billion in 2026 and is forecast to reach USD 21.15 billion by 2031 at 7.18% CAGR over 2026-2031. The acceleration reflects rising demand for zero-defect production, the fusion of artificial intelligence with industrial imaging, and expanding use cases across automotive, semiconductor, logistics, and healthcare operations. Vendors that once competed on hardware specifications now differentiate through deep-learning software, cloud connectivity, and subscription pricing, while enterprises pursue end-to-end quality assurance to limit warranty exposure. Cloud-based deployment, still a minority, benefits from scalable processing and remote management, pushing vendors to harden cybersecurity and data-governance frameworks. Regional growth patterns show Asia-Pacific retaining manufacturing primacy, the Middle East scaling greenfield automation projects, and North America and Europe enforcing tighter liability rules that favor certified vision architectures.

Global Machine Vision Systems (MVS) Market Trends and Insights

Rising Need for Zero-Defect Manufacturing

Automotive battery manufacturing and advanced electronics assemblies cannot tolerate single-point defects, leading producers to abandon statistical sampling in favor of 100% inline inspection. Machine vision systems equipped with hyperspectral cameras identify material or structural anomalies at sub-millimeter resolution, preventing costly recalls and warranty liabilities. Regulatory amendments in the European Union reinforce financial accountability, motivating investment in higher-resolution sensors and AI classifiers. Cloud-linked dashboards give plant managers real-time defect maps that shorten root-cause investigations. As zero-defect programs mature, vendors that deliver turnkey analytics, edge inference, and hardened industrial hardware capture incremental share within the machine vision systems market.

Increasing Adoption of Vision-Guided Robotics

Robot-mounted cameras now guide grippers through random part orientations, enabling bin-picking, kitting, and assembly tasks once reserved for line workers. Cognex reported customers trimming automotive changeover time from hours to minutes using AI-enabled vision, strengthening the productivity case. Edge processors inside the camera support real-time grasp planning, while collision-avoidance algorithms reduce scrap. Warehouses integrate vision-guided mobile robots that localize inventory and capture package condition, forming the backbone of lights-out fulfillment hubs. As labor scarcity persists, vision-guided robotics adds flexible capacity and accelerates the machine vision systems market across discrete and logistics sectors.

Lack of Skilled Machine Vision Integrators

Complex vision deployments span optics, lighting, image processing, neural-network tuning, and industrial networking, skills that engineering programs seldom teach as a single discipline. Small and medium enterprises outsource projects, yet system integrators remain over-booked, raising lead times and total cost. Vendor certification tracks are fragmented, making talent portability difficult and limiting labor pools in emerging markets. Delayed rollouts widen the return-on-investment horizon, especially for price-sensitive applications, constraining uptake of the machine vision systems market in growth economies. Academic-industry partnerships are forming to standardize curricula, but supply will lag demand through the medium term.

Other drivers and restraints analyzed in the detailed report include:

Growing Demand for 3D Vision in Electronics MiniaturizationStringent Quality Rules for Food and PharmaceuticalsHigh Cost of High-Resolution and Hyperspectral Cameras

For complete list of drivers and restraints, kindly check the Table Of Contents.

Segment Analysis

Hardware retained a 60.15% machine vision systems market share in 2025, underscoring its foundational role in capturing images across industrial environments. Cameras, lenses, lighting, and frame grabbers form a capital-intensive base, but commoditization pressures and standard interfaces squeeze margins. Software, advancing at a 7.42% CAGR, captures value through deep-learning inference, dataset management, and low-code application builders. Aurora software from Zebra Technologies added ready-trained neural networks in 2024, lowering entry barriers and pushing recurring revenue. OEMs increasingly package lifetime software subscriptions with edge hardware, pivoting to an annuity model that reshapes profit pools within the machine vision systems market.

The shift elevates cloud orchestration, model versioning, and cybersecurity as corporate procurement criteria. Integrators that offer unified software stacks stand to displace hardware-centric competitors, while sensor vendors partner with AI frameworks to remain relevant. As end users pursue fleet-wide analytics, software becomes the control plane over heterogeneous camera footprints, accelerating the transition from component sales to capability delivery.

PC-based installations represented 57.35% of the machine vision systems market size in 2025, favored for compute-intensive algorithms and multi-camera orchestration. However, smart cameras, compressing optics, lighting, and processing into a rugged module, record the fastest 7.24% CAGR. Automotive-qualified edge accelerators such as Hailo-10H bring transformer networks and generative AI to the camera pod, shrinking cabinet footprints. Warehouse operators adopt plug-and-play smart cameras for barcode decoding, volumetric measurement, and damage detection, bypassing external PCs. Smart-camera vendors package browser-based configuration that cuts deployment days to hours, tightening their grip on small-form-factor applications across the machine vision systems market.

Despite edge advances, PC back-ends remain indispensable in research labs, semiconductor fabs, and multi-spectral setups requiring terabytes of throughput. Hybrid architectures emerge in which smart cameras perform preliminary inference while PCs aggregate deeper analytics, illustrating coexistence rather than outright displacement.

The Machine Vision Systems Report is Segmented by Component (Hardware, and Software), Product Type (PC-Based, and Smart Camera-Based), Imaging Type (2D, 3D, and Hyperspectral and Multispectral), Deployment Mode (On-Premise, Edge/Embedded, and Cloud-Based), End-User Industry (Electronics and Semiconductors, Food and Beverage, Logistics and Retail, and More), and Geography. The Market Forecasts are Provided in Terms of Value (USD).

Geography Analysis

Asia-Pacific accounted for 40.25% of 2025 revenue, anchored by China's electronics assembly capacity, Japan's robotics expertise, and South Korea's memory-chip fabs. Regional governments fund smart-factory upgrades, while contract manufacturers embed vision to meet stringent export quality criteria. India benefits from production-linked incentives that draw global handset and battery makers, boosting local demand for inline inspection. Southeast Asian nations carve out niches in automotive wiring and chip packaging, raising vision penetration and deepening supplier ecosystems.

North America leverages reshoring policies and incentives for electric-vehicle and semiconductor plants. Regulatory oversight by the U.S. FDA and NHTSA spurs investments in validated vision lines that generate audit trails. Canada's advanced-manufacturing clusters in Ontario and Quebec integrate AI vision with robotics to offset labor constraints, while Mexico's automotive corridor deploys affordable smart-camera lines to maintain OEM approvals.

Europe combines quality-obsessed midsize manufacturers with rigorous liability statutes, sustaining steady uptake. Germany and Italy refine Industrie 4.0 programs that merge vision, robotics, and MES integration. The Middle East delivers the fastest 8.22% CAGR as Saudi Arabia and United Arab Emirates channel sovereign wealth into non-oil manufacturing, including food processing, consumer goods, and renewables. Turkey's automotive exports and Egypt's packaging plants widen regional installations.

South America shows sporadic adoption tied to export agribusiness and vehicle production, though macroeconomic volatility tempers volume. Africa remains nascent, but South Africa's automotive hubs and Morocco's electronics assemblies offer footholds for suppliers in the expanding machine vision systems market.

List of Companies Covered in this Report:

Cognex Corporation Keyence Corporation Omron Corporation Teledyne Technologies Incorporated Sony Group Corporation Atlas Copco AB (ISRA Vision) IDS Imaging Development Systems GmbH National Instruments Corporation MVTec Software GmbH Basler AG Allied Vision Technologies GmbH TKH Group NV (LMI Technologies) FLIR Systems Inc (Teledyne) Intel Corporation Qualcomm Technologies Inc Sick AG Panasonic Holdings Corporation Stemmer Imaging AG Zebra Technologies Corporation Hitachi Ltd

Additional Benefits:

 The market estimate (ME) sheet in Excel format

3 months of analyst support

Table of Contents:

1 INTRODUCTION
1.1 Study Assumptions and Market Definition
1.2 Scope of the Study

2 RESEARCH METHODOLOGY

3 EXECUTIVE SUMMARY

4 MARKET LANDSCAPE
4.1 Market Overview
4.2 Market Drivers
4.2.1 Rising Need for Zero-Defect Manufacturing
4.2.2 Increasing Adoption of Vision-Guided Robotics
4.2.3 Growing Demand for 3D Vision in Electronics Miniaturisation
4.2.4 Stringent Quality Rules for Food and Pharmaceuticals
4.2.5 Surge in On-Device AI Inference Chips
4.2.6 Emergence of Vision-as-a-Service Subscription Models
4.3 Market Restraints
4.3.1 Lack of Skilled Machine Vision Integrators
4.3.2 High Cost of High-Resolution and Hyperspectral Cameras
4.3.3 Cybersecurity Risks in Cloud-Connected Vision Systems
4.3.4 Supply Chain Volatility of Image Sensor Semiconductors
4.4 Industry Ecosystem Analysis
4.5 Impact of Macroeconomic Factors
4.6 Regulatory Landscape
4.7 Technological Outlook
4.8 Porter's Five Forces Analysis
4.8.1 Bargaining Power of Suppliers
4.8.2 Bargaining Power of Buyers
4.8.3 Threat of New Entrants
4.8.4 Threat of Substitutes
4.8.5 Intensity of Competitive Rivalry

5 MARKET SIZE AND GROWTH FORECASTS (VALUE)
5.1 By Component
5.1.1 Hardware
5.1.1.1 Vision Systems
5.1.1.2 Cameras
5.1.1.3 Optics and Illumination Systems
5.1.1.4 Frame Grabbers
5.1.1.5 Other Hardwares
5.1.2 Software
5.2 By Product Type
5.2.1 PC-Based

5.2.2 Smart Camera-Based
5.3 By Imaging Type
5.3.1 2D Imaging
5.3.2 3D Imaging
5.3.3 Hyperspectral and Multispectral Imaging
5.4 By Deployment Mode
5.4.1 On-Premise
5.4.2 Edge/Embedded
5.4.3 Cloud-Based
5.5 By End-User Industry
5.5.1 Automotive
5.5.2 Electronics and Semiconductors
5.5.3 Food and Beverage
5.5.4 Healthcare and Pharmaceutical
5.5.5 Logistics and Retail
5.5.6 Other End-User Industries
5.6 By Geography
5.6.1 North America
5.6.1.1 United States
5.6.1.2 Canada
5.6.1.3 Mexico
5.6.2 South America
5.6.2.1 Brazil
5.6.2.2 Mexico
5.6.3 Europe
5.6.3.1 Germany
5.6.3.2 United Kingdom
5.6.3.3 France
5.6.3.4 Italy
5.6.3.5 Spain
5.6.3.6 Russia
5.6.4 Asia Pacific
5.6.4.1 China
5.6.4.2 Japan
5.6.4.3 South Korea
5.6.4.4 India
5.6.5 Middle East
5.6.5.1 Turkey
5.6.5.2 Saudi Arabia
5.6.5.3 United Arab Emirates
5.6.6 Africa
5.6.6.1 South Africa
5.6.6.2 Egypt

6 COMPETITIVE LANDSCAPE
6.1 Market Concentration
6.2 Strategic Moves

6.3 Market Share Analysis
6.4 Company Profiles (includes Global level Overview, Market level overview, Core Segments, Financials as available, Strategic Information, Market Rank/Share for key companies, Products and Services, and Recent Developments)
6.4.1 Cognex Corporation
6.4.2 Keyence Corporation
6.4.3 Omron Corporation
6.4.4 Teledyne Technologies Incorporated
6.4.5 Sony Group Corporation
6.4.6 Atlas Copco AB (ISRA Vision)
6.4.7 IDS Imaging Development Systems GmbH
6.4.8 National Instruments Corporation
6.4.9 MVTec Software GmbH
6.4.10 Basler AG
6.4.11 Allied Vision Technologies GmbH
6.4.12 TKH Group NV (LMI Technologies)
6.4.13 FLIR Systems Inc (Teledyne)
6.4.14 Intel Corporation
6.4.15 Qualcomm Technologies Inc
6.4.16 Sick AG
6.4.17 Panasonic Holdings Corporation
6.4.18 Stemmer Imaging AG
6.4.19 Zebra Technologies Corporation
6.4.20 Hitachi Ltd

7 MARKET OPPORTUNITIES AND FUTURE OUTLOOK
7.1 White-Space and Unmet-Need Assessment

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