+357 96 030922
info@marketpublishers.com

# AI-based Material Handling System Market Forecasts to 2032 – Global Analysis By Equipment Type (Autonomous Mobile Robots (AMRs), Automated Guided Vehicles (AGVs), Robotic Arms, Drones, Automated Storage and Retrieval Systems (AS/RS) and Vision-Based Inspection Units), Function, End User and By Geography

https://marketpublishers.com/r/AA2DEA5E6049EN.html
Date: September 2025
Pages: 200
Price: US$ 4,150.00 (Single User License)
ID: AA2DEA5E6049EN

## Abstracts

According to Stratistics MRC, the Global AI-based Material Handling System Market is accounted for $77.31 billion in 2025 and is expected to reach $164.60 billion by 2032 growing at a CAGR of 11.4% during the forecast period. AI-driven Material Handling Systems combine advanced artificial intelligence with conventional handling processes to improve productivity, precision, and operational safety. Leveraging machine learning, robotics, and computer vision, these systems automate functions like moving, sorting, and storing products in warehouses or manufacturing plants. AI analyzes live data to optimize transport routes, forecast equipment maintenance, and minimizes human mistakes, resulting in cost reductions and accelerated workflows. Additionally, these systems can quickly adjust to shifts in demand, offering operational flexibility and scalability. The adoption of AI in material handling is revolutionizing industrial logistics, enabling smarter, more dependable, and highly efficient supply chains that meet modern manufacturing and distribution challenges.

According to the Material Handling Industry (MHI), in the 2023 MHI Annual Industry Report, 60% of supply chain professionals said they expect to adopt AI technologies in their operations within the next five years, up from just 12% currently.

Market Dynamics:

+357 96 030922
info@marketpublishers.com

Driver:

Increasing automation in warehouses and manufacturing

The rising implementation of automation in manufacturing plants and warehouse operations is fueling the growth of the AI-based Material Handling System market. Businesses are adopting AI-enabled robots, automated guided vehicles, and smart sorting technologies to improve workflow efficiency, lower labor dependency, and reduce errors. Automation enables faster material transport, real-time inventory tracking, and optimized operational performance. The increasing pressure to meet quick delivery timelines, control operational costs, and boost productivity drives the demand for intelligent handling solutions. As industries expand and supply chain optimization becomes critical, AI-based automated material handling systems are witnessing accelerated adoption, becoming an essential element of modern industrial operations.

Restraint:

High initial investment costs

A key challenge hindering the growth of the AI-based Material Handling System market is the substantial upfront investment required. Deploying AI-powered robots, automated guided vehicles, and smart sorting technologies involves considerable capital spending, often making it difficult for small and medium enterprises to adopt. Costs include acquiring sophisticated machinery, integrating AI software, and training staff for effective operation and maintenance. The potentially extended period before realizing returns can deter companies from investing in these systems. As a result, the high initial expenditure acts as a barrier, limiting the broader implementation of AI-based material handling solutions, especially in financially constrained regions or smaller-scale operations.

Opportunity:

Technological advancements in AI and robotics

Ongoing innovations in artificial intelligence, robotics, and machine learning are opening significant growth opportunities for the AI-based Material Handling System market. Advanced AI solutions enable predictive analytics, intelligent routing, and autonomous operational decisions in warehouses and manufacturing environments. Robotics and

+357 96 030922
info@marketpublishers.com

automation reduce manual labor while enhancing accuracy and processing speed. Technologies like collaborative robots, vision-guided vehicles, and smart conveyor systems allow organizations to efficiently scale operations and respond to changing supply chain requirements. These technological developments improve productivity, reduce operational costs, and minimize errors.

Threat:

Rapid technological changes leading to obsolescence

The rapid pace of innovation in AI, robotics, and automation threatens the AI-based Material Handling System market by potentially rendering current technologies outdated. Companies that invest in present-day AI solutions may need frequent upgrades to stay competitive, incurring additional costs, operational downtime, and staff retraining. The risk of newer, more advanced systems superseding existing ones can make businesses reluctant to commit to long-term investments. This fast-evolving technological landscape introduces uncertainty, discouraging organizations from fully adopting AI-driven material handling solutions.

Covid-19 Impact:

The COVID-19 pandemic influenced the AI-based Material Handling System market by boosting the implementation of automation and contactless operations in warehouses and production facilities. Social distancing protocols and workforce shortages prompted companies to deploy AI-powered robots, automated guided vehicles, and smart sorting technologies to sustain operations and reduce human interaction. Disruptions in supply chains emphasized the necessity of real-time inventory management and optimized material handling. Although some businesses temporarily reduced investments due to economic uncertainty, the pandemic underscored the value of AI-driven automation for operational resilience and continuity.

The autonomous mobile robots (AMRs) segment is expected to be the largest during the forecast period

The autonomous mobile robots (AMRs) segment is expected to account for the largest market share during the forecast period because of their versatility, efficiency, and adaptability in handling materials across warehouses and production facilities. Unlike conventional systems, AMRs can navigate autonomously, detect and avoid obstacles, and operate safely alongside humans, boosting operational efficiency. Their seamless

+357 96 030922
info@marketpublishers.com

integration with warehouse management systems, support for complex tasks, and real-time decision-making capabilities make them highly desirable for companies aiming for scalable and intelligent automation. The rising need for faster deliveries, labor cost reduction, and contactless operations have reinforced AMRs' dominance, positioning them as a key solution in modern AI-driven material handling operations.

The picking & placing segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the picking & placing segment is predicted to witness the highest growth rate, driven by increasing automation needs in warehouses and production facilities. This segment utilizes AI-enabled robots and systems to accurately select, handle, and position products, minimizing human errors and manual labor. The expansion of e-commerce, demand for faster deliveries, and complex order fulfillment requirements are fueling adoption of automated picking and placing solutions. Integration of AI and computer vision enhances accuracy, speed, and operational efficiency. Continuous technological innovation, combined with efficiency and productivity benefits, positions automated picking and placing as the fastest-growing application within the material handling industry.

Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share, owing to its robust industrial base, early adoption of automation, and the presence of major technology providers. The region's manufacturing and logistics sectors are increasingly implementing AI-driven robots, automated guided vehicles, and smart warehouse solutions to improve productivity, cut labor costs, and optimize supply chain operations. Strong government initiatives, continuous technological advancements, and high investment in digital and smart manufacturing further propel market expansion. North American industries focus on operational efficiency, safety, and digital transformation, which accelerate the adoption of AI-based material handling systems, positioning the region as a leading contributor to the global market.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR, driven by rapid industrial growth, the rise of e-commerce, and increasing use of automation technologies. Key countries, including China, Japan, and India, are investing significantly in AI-powered robots, smart warehouses, and advanced

+357 96 030922
info@marketpublishers.com

manufacturing solutions to improve productivity and reduce reliance on manual labor. The growth of logistics and manufacturing sectors, coupled with government initiatives supporting digital transformation and Industry 4.0 adoption, fuels market expansion. Increasing requirements for faster order fulfillment, real-time inventory control, and flexible material handling solutions are accelerating the adoption of AI-driven systems in the region.

Key players in the market

Some of the key players in AI-based Material Handling System Market include Daifuku Co., Ltd., KION Group AG, Toyota Industries Corporation, Honeywell International, SSI SCHAEFER, Amazon Robotics, Walmart, UPS, FedEx, Dematic, Vanderlande Industries, MHS Global, GreyOrange, Swisslog and Addverb Technologies.

Key Developments:

In May 2025, FedEx and Amazon strike large-package delivery deal. The agreement marks a rekindling of the two parties' relationship nearly six years after FedEx announced it wouldn't renew its Ground and Express domestic shipping contracts with Amazon. At the time, FedEx said it wanted to focus on the broader e-commerce market.

In October 2024, KION Group has entered into a strategic partnership with Eurofork S.p.A., a leading manufacturer of pallet shuttle systems. The two companies have signed a cooperation agreement at KION GROUP AG. Under the agreement, Eurofork's E4CUBE® solution will be distributed through the sales and service networks of the KION brands in the Industrial Trucks & Services segment in the EMEA region with immediate effect.

In October 2024, Toyota Motor Corporation and Nippon Telegraph and Telephone Corporation have agreed to a joint initiative in the field of mobility and AI/telecommunications with the aim of realizing a society with zero traffic accidents. Through their previous collaborations, the two companies have confirmed that they share common values, such as contributing to society through technological and industrial development, a people-centered approach, and global contributions that start in Japan.

Equipment Types Covered:

Autonomous Mobile Robots (AMRs)

+357 96 030922
info@marketpublishers.com

- Automated Guided Vehicles (AGVs)
- Robotic Arms
- Drones
- Automated Storage and Retrieval Systems (AS/RS)
- Vision-Based Inspection Units

Functions Covered:

- Transporting
- Storing
- Picking & Placing
- Packaging
- Inspection & Quality Control

End Users Covered:

- Automotive
- E-commerce Fulfillment
- Food & Beverage
- Pharmaceuticals
- Aerospace
- Third-Party Logistics (3PL)

+357 96 030922
info@marketpublishers.com

- Electronics Manufacturing

Regions Covered:

- North America
  - US
  - Canada
  - Mexico
- Europe
  - Germany
  - UK
  - Italy
  - France
  - Spain
  - Rest of Europe
- Asia Pacific
  - Japan
  - China
  - India
  - Australia
  - New Zealand

+357 96 030922
info@marketpublishers.com

South Korea

Rest of Asia Pacific

South America

Argentina

Brazil

Chile

Rest of South America

Middle East & Africa

Saudi Arabia

UAE

Qatar

South Africa

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 2024, 2025, 2026, 2028, and 2032
- 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

+357 96 030922
info@marketpublishers.com

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

+357 96 030922
info@marketpublishers.com

# Contents

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com



## 9 KEY DEVELOPMENTS



## 10 COMPANY PROFILING

+357 96 030922
info@marketpublishers.com

+357 96 030922
info@marketpublishers.com

# List Of Tables

## LIST OF TABLES

+357 96 030922
info@marketpublishers.com


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

+357 96 030922
info@marketpublishers.com

## I would like to order

Product name: AI-based Material Handling System Market Forecasts to 2032 – Global Analysis By Equipment Type (Autonomous Mobile Robots (AMRs), Automated Guided Vehicles (AGVs), Robotic Arms, Drones, Automated Storage and Retrieval Systems (AS/RS) and Vision-Based Inspection Units), Function, End User and By Geography

Product link: https://marketpublishers.com/r/AA2DEA5E6049EN.html

Price: US$ 4,150.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:
info@marketpublishers.com

## Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page https://marketpublishers.com/r/AA2DEA5E6049EN.html