

Packaging Robots Market Report by Gripper Type (Clamp, Claw, Vacuum, and Others), Application (Picking and Placing, Packing, Palletizing), End User (Food and Beverage, Pharmaceutical, Consumer Products, Logistics, and Others), and Region 2024-2032

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Abstracts

The global packaging robots market size reached US\$ 3,606.9 Million in 2023. Looking forward, IMARC Group expects the market to reach US\$ 9,622.9 Million by 2032, exhibiting a growth rate (CAGR) of 11.3% during 2024-2032. The rising need for higher operational efficiency and cost reduction, constant technological advancements in artificial intelligence and machine learning, and labor shortages coupled with rising labor costs are some of the major factors propelling the market.

Packaging robots are automated machines currently revolutionizing the supply chain and manufacturing industries. They are specialized in handling a wide range of tasks such as sorting, filling, sealing, and labeling products in a highly efficient manner. Leveraging advanced technologies like artificial intelligence (AI), machine learning (ML), and computer vision, these robots adapt to varying product dimensions and packaging materials with ease. They help reduce the time, labor, and error rate associated with traditional human-led packaging processes. Companies are increasingly integrating packaging robots into their operations to benefit from their high-speed precision, lower overhead costs, and enhanced scalability. These systems operate in a controlled environment, adhering to strict quality and safety standards, thereby ensuring product integrity throughout the packaging lifecycle. As a result, packaging robots find extensive applications in modern production lines, offering businesses a competitive edge through streamlined operations and cost-effectiveness.

The rising consumer preferences for sustainable and well-packaged products are prompting companies to invest in advanced, eco-friendly packaging solutions. This, coupled with the heightened emphasis on operational efficiency and cost savings, will stimulate market growth during the forecast period. Packaging robots are highly precise, meaning they utilize materials efficiently, thus contributing to waste reduction and sustainability goals. Moreover, stringent regulatory standards and guidelines regarding hygiene, quality control, and safety in packaging has accelerated the adoption of these robots for compliance. Additionally, the escalating demand for customized packaging solutions, especially in sectors like e-commerce and pharmaceuticals, is positively influencing the market growth. Robots, armed with software that allows easy reprogramming, can adapt to these custom requirements faster than traditional machinery. Furthermore, the advent of IoT-enabled packaging robots that offer enhanced monitoring and data collection capabilities, allowing businesses to make informed decisions and optimize workflows, is propelling the market growth. Other factors, including the expanding manufacturing sectors, rapid economic growth in emerging countries, and the rising need for automation due to the increasingly global nature of supply chains, are also anticipated to catalyze the market growth.

Packaging Robots Market Trends/Drivers:

Increase in Operational Efficiency and Cost Reduction

The incessant drive for higher operational efficiency is a major force propelling the packaging robots market. Companies are continually seeking ways to optimize production lines, reduce overhead costs, and streamline operations. Packaging robots, known for their speed, accuracy, and consistency, offer an effective solution to these challenges. They can operate around the clock without fatigue, significantly boosting productivity. Additionally, their precision in tasks like sorting, filling, and sealing minimizes waste and rework, further cutting down costs. As businesses operate in increasingly competitive environments, the ability to produce more with fewer resources has become imperative. This focus on efficiency and cost-effectiveness is making the adoption of packaging robots an increasingly attractive option for companies worldwide.

Rise in Labor Shortages and Labor Costs

Labor shortages, especially in developed countries, are a pressing concern for many industries. In addition to this, rising labor costs are making human-led operations increasingly expensive. Packaging robots offer a viable solution to both issues. They can efficiently perform repetitive and time-consuming tasks, thus freeing human workers

to focus on more complex and value-added activities. As labor-related challenges continue to escalate worldwide, the emerging role of packaging robots as a strategic asset for maintaining productivity and controlling costs across a wide range of sectors is becoming more prominent, providing a positive thrust to the market growth.

Continuous Technological Advancements by Key Players

Technological progress in robotics, particularly the integration of artificial intelligence (AI) and machine learning (ML), is another crucial factor fueling the expansion of the packaging robots market. These technologies enable robots to perform complex tasks, adapt to new situations, and even learn from experience, thus expanding their applicability. For instance, AI-powered computer vision allows robots to recognize and sort items based on size, shape, and color, making them suitable for a wider array of packaging tasks. This adaptability and versatility, made possible through technological advancements, are encouraging more industries to integrate packaging robots into their operations, thereby augmenting market growth.

Packaging Robots Industry Segmentation:

IMARC Group provides an analysis of the key trends in each segment of the global packaging robots market report, along with forecasts at the global, regional and country levels from 2024-2032. Our report has categorized the market based on gripper type, application and end user.

Breakup by Gripper Type:

- Clamp
- Claw
- Vacuum
- Others

The report has provided a detailed breakup and analysis of the market based on the gripper type. This includes clamp, claw, vacuum, and others.

Clamp grippers are predominantly used for handling rigid objects with defined shapes, such as boxes, cartons, and plastic containers. These grippers are highly reliable and can manage heavy payloads. Industries like food and beverages, pharmaceuticals, and consumer goods often prefer clamp grippers due to their ability to securely hold objects without causing damage, thereby ensuring the integrity of packaged products.

Claw grippers, also known as finger grippers, are versatile and capable of handling a variety of object shapes and sizes. They are particularly useful in industries requiring delicate handling, such as electronics or cosmetics. The multi-fingered design of claw grippers allows for more nuanced control over the items being packaged, making them ideal for tasks requiring greater precision.

Vacuum grippers are widely used for handling objects with flat surfaces or those that require gentle handling, such as glass panels, papers, and plastic films. They rely on suction to hold items and are highly preferred in industries, including automotive, electronics, and food packaging. These grippers are especially useful for high-speed applications and for handling fragile or sensitive items, as they reduce the chance of damaging the product during the packaging process.

Breakup by Application:

Picking and Placing

Packing

Tray Packing

Case Packing

Filling

Others

Palletizing

Case Palletizing

Bag Palletizing

De-Palletizing

Picking and placing holds the largest share in the market

A detailed breakup and analysis of the market based on the application has also been provided in the report. This includes picking and placing, packing (tray packing, case packing, filling, and others), and palletizing (case palletizing, bag palletizing, and de-palletizing). According to the report, picking and placing accounted for the largest market share.

Picking and placing tasks are fundamental to any packaging operation, encompassing activities such as sorting items from conveyor belts and placing them into containers, boxes, or onto other conveyors. Since these tasks are repetitive, time-sensitive, and labor-intensive, packaging robots excel at performing them more efficiently and accurately than human workers.

The integration of advanced technologies like machine vision and artificial intelligence has further improved the effectiveness of robots in these applications, facilitating real-time adjustments and highly accurate operations. Such advancements make robots ideal for environments where speed, consistency, and high throughput are critical, such as in the food and beverage, pharmaceutical, and e-commerce industries. Additionally, automated picking and placing reduces the chances of manual errors and contamination, which is particularly important in sectors where stringent quality control and hygiene standards are in place. Owing to these factors, companies view investment in robots for picking and placing tasks as a strategic avenue to achieve operational excellence, thereby fueling the segment growth.

Breakup by End User:

Food and Beverage

Pharmaceutical

Consumer Products

Logistics

Others

The report has provided a detailed breakup and analysis of the market based on the end user. This includes food and beverage, pharmaceutical, consumer products, logistics, and others.

In the food and beverages sector, packaging robots are crucial for performing tasks like sorting, filling, and sealing perishable items at high speeds. They meet stringent hygiene and safety regulations, ensuring that the packaged products comply with strict quality standards. The need for rapid, yet accurate, packaging to preserve the shelf life of food products makes robots highly preferred in this industry.

In pharmaceuticals, precision and compliance with regulatory standards are paramount. Packaging robots handle tasks ranging from filling vials and blister packs to labeling and capping with extreme accuracy. Their ability to maintain a sterile environment and adhere to Good Manufacturing Practices (GMP) makes them invaluable for pharmaceutical packaging.

Consumer products, such as cosmetics, cleaning supplies, and personal care items, often require intricate and customized packaging. Robots in this industry are adept at handling different packaging formats and materials, thus meeting the diverse needs of

consumers. Their flexibility and speed contribute to higher throughput, meeting the large-scale production demands common in this industry.

In the logistics segment, packaging robots are primarily employed for picking and placing items and for sorting and labeling. The exponential growth in online shopping has heightened the need for fast, efficient, and error-free packaging solutions. Robots help enhance the speed of operations while reducing the error rate, making them essential for handling the high volumes of products being shipped daily.

Breakup by Region:

North America

United States

Canada

Asia-Pacific

China

Japan

India

South Korea

Australia

Indonesia

Others

Europe

Germany

France

United Kingdom

Italy

Spain

Russia

Others

Latin America

Brazil

Mexico

Others

Middle East and Africa

Asia-Pacific exhibits a clear dominance in the market

The market research report has also provided a comprehensive analysis of all the major

regional markets, which include North America (the United States and Canada); Asia-Pacific (China, Japan, India, South Korea, Australia, Indonesia, and others); Europe (Germany, France, the United Kingdom, Italy, Spain, Russia, and others); Latin America (Brazil, Mexico, and others); and the Middle East and Africa. According to the report, Asia-Pacific accounted for the largest market share.

Asia-Pacific held the biggest share in the market since the region is witnessing rapid industrialization in countries, such as China, India, and Japan, where manufacturing sectors are expanding at an exponential rate. This industrial growth creates a heightened demand for efficient, automated packaging solutions. Another major contributing aspect is the availability of skilled labor in automation technologies within the region. Countries like Japan are pioneers in robotics and automation, producing the machinery as well as the technical expertise required to integrate and maintain these systems.

Additionally, the Asia Pacific region boasts the presence of some of the world's busiest ports and logistics hubs, necessitating high-speed and high-volume packaging solutions to manage the massive inflow and outflow of goods. Packaging robots fulfill this need by optimizing the supply chain and reducing bottlenecks, thus making operations more efficient. Labor cost advantages also come into play. Although Asia has been known for its relatively low labor costs, increasing wage rates and labor shortages are pushing companies to seek automated solutions, and packaging robots offer an effective alternative.

Moreover, governments in the region are increasingly supportive of automation and Industry 4.0 initiatives, providing subsidies and favorable policies for companies adopting automated technologies, which in turn solidifies the position of Asia-Pacific as the leading regional market for packaging robots.

Competitive Landscape:

The market is experiencing steady growth as numerous key players are engaging in a variety of strategic activities to maintain and grow their market share. They are heavily investing in research and development (R&D) to innovate and improve robot capabilities, often incorporating advanced technologies such as artificial intelligence and machine learning to enhance precision and adaptability. Mergers and acquisitions are also common, as these industry leaders aim to diversify their product portfolios and extend their global reach. Partnerships with end-user industries are being formed to better understand client needs and tailor solutions accordingly. Furthermore, these players are increasingly focusing on sustainability, developing energy-efficient models

that appeal to environmentally conscious customers. Through these multifaceted approaches, key players are solidifying their competitive edge and driving the industry forward.

The market research report has provided a comprehensive analysis of the competitive landscape in the market. Detailed profiles of all major companies have also been provided. Some of the key players in the market include:

ABB Ltd.
Fanuc Corporation
FIPA GmbH
KRONES AG
KUKA AG
MIP Robotics
Mitsubishi Electric Corporation
ProMach Inc.
Remtec Automation LLC
Schneider Electric SE
Syntegon Holding GmbH
Yaskawa America Inc. (Yaskawa Electric Corporation)

Recent Developments:

In November 2021, FANUC Corporation, a Japan-based manufacturer of automation products, such as robotics and computer numerical control wireless systems, and ROBOMACHINE, launched a new LR-10iA/10 robot designed for machine tending and for various picking applications. This is a compact six-axis robot suitable for small machine tending tasks and warehouse pick-and-place automation.

In February 2021, ABB Ltd. introduced the next-generation GoFa and SWIFTI cobot families, expanding its collaborative robot (cobot) portfolio. These new cobots offer higher payloads and speeds, aiming to complement the company's existing cobot lineup, including YuMi. This launch is part of ABB's strategy to meet the growing demand for automation in various high-growth industries, including electronics, healthcare, consumer goods, logistics, and food and beverage.

In October 2020, Yaskawa Electric Corporation announced the launch of four models as part of the lineup of the new palletizing robot series MOTOMAN-PL. These models include the MOTOMAN-PL190, MOTOMAN-PL320, MOTOMAN-PL500, and MOTOMAN-PL800. The MOTOMAN-PL series maximizes robot performance and improves energy-saving performance by the power regeneration function and enhances maintainability by reducing wiring, contributing to the setup of an optimal palletizing

system.

Key Questions Answered in This Report

1. How big is the global packaging robots market?
2. What is the expected growth rate of the global packaging robots market during 2024-2032?
3. What are the key factors driving the global packaging robots market?
4. What has been the impact of COVID-19 on the global packaging robots market?
5. What is the breakup of the global packaging robots market based on the application?
6. What are the key regions in the global packaging robots market?
7. Who are the key players/companies in the global packaging robots market?

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