

Automotive Robotics Market Report by Product Type (Cartesian Robots, SCARA Robots, Articulated Robot, and Others), Component Type (Controller, Robotic Arm, End Effector, Drive and Sensors), Application (Assembly, Dispensing, Material Handling, Welding, and Others), End User (Vehicle Manufacturers, Automotive Component Manufacturers), and Region 2024-2032

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Abstracts

The global automotive robotics market size reached US\$ 11.0 Billion in 2023. Looking forward, IMARC Group expects the market to reach US\$ 26.4 Billion by 2032, exhibiting a growth rate (CAGR) of 10.1% during 2024-2032. The market is expanding due to increasing demand for automation in the automotive industry, rising disposable income of consumers, growing demand for electric vehicles (EVs), rapid technological advancements, the heightened integration of robotics with industry 4.0, and the widespread consumer demand for customization.

Automotive Robotics Market Analysis:

Major Market Drivers: The primary drivers of the global automotive robotics market include the increasing need for automation to enhance manufacturing efficiency and reduce costs, ongoing shift towards electric vehicles and the necessity for specialized manufacturing processes for EVs, and the rising disposable income of consumers.

Key Market Trends: The ongoing shift towards integrating artificial intelligence (AI) with robotic systems to enhance their ability to perform complex tasks autonomously and adapt to changing production conditions, is bolstering the automotive robotics market recent opportunities.

Geographical Trends: Asia Pacific dominates the automotive robotics market due to the rapid expansion of automotive manufacturing, supported by strong government initiatives and the presence of major robotics manufacturers. Other regions are also growing, due to modernization of existing automotive facilities and the increasing adoption of electric vehicles that require new manufacturing techniques and automation solutions.

Competitive Landscape: As per the automotive robotics market statistics, some of the major market players in the automotive robotics industry include ABB Ltd., Denso Wave Incorporated (DENSO Corporation), D?rr Aktiengesellschaft, FANUC, Harmonic Drive Systems Inc., Kawasaki Heavy Industries Ltd., KUKA Aktiengesellschaft (Midea Group), Nachi-Fujikoshi Corp., Omron Corporation, Seiko Epson Corporation, Yamaha Motor Co. Ltd., and Yaskawa Electric Corporation, among many others.

Challenges and Opportunities: The market faces several problems, such as high initial investment and the complexity of integrating robotic systems into existing manufacturing lines. However, this also presents opportunities for robotics vendors to develop more cost-effective and flexible solutions that can be easily integrated and scaled according to business needs.

Automotive Robotics Market Trends:

Increasing demand for automation in manufacturing processes

The automotive industry is increasingly adopting robotics to enhance manufacturing efficiency, reduce costs, and improve product quality. According to the International Federation of Robotics (IFR), the installation of robotics in manufacturing rose by 12% and reached 41,624 units in 2022 in North America. Among those, the automotive industry was the largest adopter as they installed 20,391 industrial robots, which is an increase of 30% compared to 2021. Automation through robotics offers precision and repeatability, which are important for maintaining high-quality standards in automotive production. In the United States, demand from car makers and manufacturers of components rose by 48% in 2022, boosting the use of robotics in welding, painting, assembling, and heavy lifting, which increased adoption rates to 14,594 units. Moreover, in Canada, the utilization of robotics for motor vehicles, engines, and bodies grew by 99%, with 263 units sold.

Rising disposable income of consumers

With rising household incomes and increased demand for automobiles, particularly in emerging nations, there has been a significant increase in passenger car sales worldwide. According to the Organisation Internationale des Constructeurs

d'Automobiles (OICA), around 92724668 vehicles and 65272367 passenger cars were sold globally in 2022. As a result, some automakers are seeking to improve vehicle production by implementing novel technology such as robots. For example, in April 2021, BMW i Ventures, Inc. made an investment in Plus One Robotics, a well-known developer of vision software for logistical industrial robots. The company's goal with this cooperation is to speed up automation across the supply chain and logistics sector while also providing warehouse operators with a transformational experience.

Growing demand for electric vehicles (EVs)

The expanding usage of electric cars (EVs), as environmental concerns mount and government laws favor sustainable transportation options, is driving demand for automotive robots. For example, in November 2021, the governments of the United States, Canada, Mexico, and the United Kingdom agreed to convert their entire fleet of 120,000 cars to electric vehicles. This effort intends to attain zero emissions by 2040, with the goal of lowering greenhouse gas emissions. It demands the modification of manufacturing processes to meet the specific needs of electric vehicle production, such as battery assembly, the integration of complicated electrical systems, and lightweight material handling. For example, in January 2022, FANUC introduced the M-1000iA, a 1,000 kg payload industrial robotic arm. This robot is built to manage hefty products, including automotive components, construction materials, and battery packs for EVs.

Automotive Robotics Market Segmentation:

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

Breakup by Product Type:

- Cartesian Robots
- SCARA Robots
- Articulated Robot
- Others

Articulated robot accounts for the majority of the market share

The report has provided a detailed breakup and analysis of the market based on the product type. This includes cartesian robots, SCARA robots, articulated robot, and

others. According to the report, articulated robot represented the largest segment.

As per the automotive robotics market trends, articulated robots represent the largest segment. They are characterized by their rotational joints that allow for exceptional flexibility and range of motion in performing complex tasks, such as assembly, welding, and material handling. Moreover, the versatility of articulated robots that makes them ideally suited for various applications within the automotive manufacturing process, such as intricate component installations and heavy lifting and precise positioning tasks, is fueling the automotive robotics market demand. Besides this, their adaptability to work in constrained spaces and handle different tasks without reconfiguration, thereby enhancing production efficiency and reducing operational costs, is fostering automotive robotics market recent developments.

Breakup by Component Type:

- Controller
- Robotic Arm
- End Effector
- Drive and Sensors

Robotic arm holds the largest share of the industry

A detailed breakup and analysis of the market based on the component type have also been provided in the report. This includes controller, robotic arm, end effector, and drive and sensors. According to the report, robotic arm accounted for the largest market share.

Based on the automotive robotics market analysis, the robotic arm emerged as the largest segment. Robotic arms are crucial for their precision and efficiency in automating critical manufacturing tasks, such as welding, painting, and assembly, in automotive production lines. Moreover, their design allows for replicating complex human arm movements, making them indispensable for operations requiring high accuracy and consistency. Besides this, the robustness and versatility of robotic arms that enable manufacturers to boost productivity, maintain quality standards, and reduce human error and labor costs are enhancing the automotive robotics market growth.

Breakup by Application:

- Assembly

Dispensing
Material Handling
Welding
Others

Welding represents the leading market segment

The report has provided a detailed breakup and analysis of the market based on the application. This includes assembly, dispensing, material handling, welding, and others. According to the report, welding represented the largest segment.

According to the automotive robotics forecast, welding is identified as the largest segment. Robotic welding has become indispensable in automotive manufacturing due to its precision, speed, and consistency, which are critical for achieving strong, durable welds in vehicle assembly. Moreover, they enhance production efficiency by executing high-quality welds faster than manual processes and with fewer errors, significantly reducing material waste and rework costs. Besides this, the integration of advanced sensors and control systems, allowing the robots to adapt to varying materials and complex geometries while ensuring optimal weld quality across diverse production requirements, is catalyzing the automotive robotics market share.

Breakup by End User:

Vehicle Manufacturers
Automotive Component Manufacturers

A detailed breakup and analysis of the market based on the end-user have also been provided in the report. This includes vehicle manufacturers and automotive component manufacturers.

Based on the automotive robotics market outlook, vehicle manufacturers represent a major end-user segment as they utilize robotics extensively across various stages of the vehicle manufacturing process, such as stamping, body assembly, painting, and final inspection. Moreover, the increasing adoption of robotics by vehicle manufacturers, driven by the need to enhance production efficiency, increase precision, and ensure consistency in quality while managing large-scale production volumes, is bolstering the automotive robotics market revenue.

According to the automotive robotics market report, automotive component

manufacturers form another crucial segment in the automotive robotics market. It employs robotics primarily for tasks, such as component assembly, machining, and material handling. Moreover, robotics in component manufacturing ensures high precision and efficiency, especially in producing complex and small parts that require meticulous attention to detail, thereby positively impacting the automotive robotics market recent price.

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 leads the market, accounting for the largest automotive robotics market share

The 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 represents the largest regional market for automotive robotics.

According to the automotive robotics market overview, Asia Pacific stands out as the largest regional segment, driven by rapid industrialization and the expansion of automotive manufacturing in countries such as China, Japan, South Korea, and India. Moreover, the heightened adoption of robotics due to its strong emphasis on enhancing manufacturing processes, increasing production capacities, and reducing operational costs is bolstering the automotive robotics market's recent opportunities. Along with this, the presence of major automotive and electronics manufacturers, who are early adopters of advanced robotic technologies, is fueling the market growth. Additionally, the imposition of various government initiatives to promote the use of industrial automation to maintain manufacturing competitiveness in the global arena is strengthening the market growth.

Competitive Landscape:

The market research report has also provided a comprehensive analysis of the competitive landscape in the market. Detailed profiles of all major companies have also been provided. Some of the major market players in the automotive robotics industry include ABB Ltd., Denso Wave Incorporated (DENSO Corporation), Durr Aktiengesellschaft, FANUC, Harmonic Drive Systems Inc., Kawasaki Heavy Industries Ltd., KUKA Aktiengesellschaft (Midea Group), Nachi-Fujikoshi Corp., Omron Corporation, Seiko Epson Corporation, Yamaha Motor Co. Ltd., Yaskawa Electric Corporation, etc.

(Please note that this is only a partial list of the key players, and the complete list is provided in the report.)

Major automotive robotics market companies are actively engaged in expanding their product portfolios, enhancing technological capabilities, and entering strategic partnerships and acquisitions to strengthen their market positions. Companies like ABB, KUKA AG, Fanuc Corporation, and Yaskawa Electric are leading with innovations in robotic systems that offer greater precision, flexibility, and integration with advanced technologies, such as artificial intelligence (AI) and machine learning (ML). They are aimed at optimizing production processes and enabling customization in automotive manufacturing. Additionally, major players are expanding their geographical reach by establishing new facilities and collaborating with automotive manufacturers in emerging

markets. They are forming collaborations and joint ventures with local firms to tailor their offerings to regional needs and comply with local regulations.

Automotive Robotics Market News:

In April 2020, KUKA AG and BMW AG signed a framework agreement to supply around 5,000 robots for new production lines and factories. The KUKA industrial robots will be used around the world at the international production sites of the BMW Group for the manufacture of the current and future generations of vehicle models. The several robot models will be used predominantly in body-in-white production and other technologies. In February 2022, FANUC unveiled the CRX family of collaborative robots, which includes the CRX-5iA with a 5kg payload, CRX-20iA/L with a 20kg payload and the CRX-25iA with a 25-30kg payload. They all follow the CRX-10iA and CRX-10iA/L, cobot models with a 10kg payload.

Key Questions Answered in This Report

1. What was the size of the global automotive robotics market in 2023?
2. What is the expected growth rate of the global automotive robotics market during 2024-2032?
3. What has been the impact of COVID-19 on the global automotive robotics market?
4. What are the key factors driving the global automotive robotics market?
5. What is the breakup of the global automotive robotics market based on the product type?
6. What is the breakup of the global automotive robotics market based on the component type?
7. What is the breakup of the global automotive robotics market based on application?
8. What are the key regions in the global automotive robotics market?
9. Who are the key players/companies in the global automotive robotics market?

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