

North America Robot End-Effector Market Size and Forecast (2021 - 2031)

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Abstracts

The North America Robot End-Effector Market is projected to grow significantly, reaching an estimated US\$ 2,416.1 million by 2031, up from US\$ 1,058.8 million in 2024. This growth represents a compound annual growth rate (CAGR) of 12.8% from 2025 to 2031, driven by the increasing demand for advanced robotic systems across various industries.

Executive Summary and Market Analysis

As companies strive to boost productivity, precision, and safety, the demand for sophisticated robotic systems, including end effectors, has surged. North America, with its robust industrial base and early adoption of smart manufacturing technologies, is leading this transformation. Key sectors such as automotive, aerospace, electronics, and healthcare are increasingly utilizing robotic arms equipped with advanced end effectors to enhance assembly line efficiency, perform complex tasks, and reduce human intervention in hazardous environments.

A notable development in this market occurred in November 2024, when German auto parts manufacturer Schaeffler announced a partnership with Agility Robotics to deploy a significant number of humanoid robots, known as Digit, across its global operations, including plants in North America. This initiative highlights the growing trend of integrating humanoid robots with advanced end effector capabilities into manufacturing processes.

Companies are investing heavily in next-generation end effectors, such as adaptive grippers, vacuum tools, and sensor-integrated systems, which enable more precise and flexible operations. The rise of collaborative robots (cobots) is further driving demand,

as these robots require end effectors that can safely and effectively interact with human workers. For instance, in August 2024, Figure AI launched the humanoid robot "Figure 02," which features advanced five-fingered robotic hands capable of lifting weights up to 25 kg. This robot has been tested in a BMW plant in South Carolina, indicating a promising future for humanoid robots in industrial settings.

The trend towards reshoring manufacturing and rising labor costs in the US and Canada are accelerating automation initiatives, particularly among small- and medium-sized enterprises (SMEs). This shift is creating new opportunities for end effector manufacturers. Additionally, the expanding e-commerce and logistics sectors are increasingly adopting robotic solutions for tasks such as material handling, packaging, and sorting, all of which necessitate customized end-of-arm tooling.

Market Segmentation Analysis

The North America Robot End-Effector Market can be segmented by type, application, industry, and robot type:

By Type: The market is divided into Welding Guns, Grippers, Tool Changers, Clamps, Suction Cups, Vacuum, and Others. The Grippers segment was the market leader in 2024.

By Application: The market is categorized into Handling, Assembly, Welding, Dispensing, Processing, and Others, with the Handling segment dominating in 2024.

By Industry: The market is segmented into Automotive, Electrical and Electronics, Metals and Machinery, Food and Beverages, Retail and E-commerce, and Others, where the Automotive sector held the largest share in 2024.

By Robot Type: The market is divided into Traditional Robots and Collaborative Robots, with Traditional Robots leading in 2024.

Market Outlook

According to the International Federation of Robotics (IFR), the World Robotics report published in September 2024 indicated that there were 4,281,585 robots operating in

factories worldwide, marking a 10% increase. Annual installations of robots have exceeded half a million units for three consecutive years, with 10% of newly deployed robots in 2023 installed in the Americas.

Key companies are actively pursuing strategic initiatives to enhance their market presence. For example, in June 2025, ABB Robotics expanded its portfolio by introducing three new large industrial robot models: the IRB 6730S, IRB 6750S, and IRB 6760. These additions, along with other next-generation robots launched since 2022, position ABB as a leader in providing versatile robotic solutions tailored to modern manufacturing needs.

Country Insights

The North America Robot End-Effector Market is further segmented by country into the United States, Canada, and Mexico, with the United States holding the largest market share in 2024. The increasing adoption of robotics in industries such as automotive, electronics, aerospace, and healthcare is driving the demand for end effectors in the US. These devices are crucial for enabling robots to perform tasks such as gripping, welding, assembly, and material handling with high precision and efficiency.

The Advanced Robotics for Manufacturing (ARM) Institute, a significant player in the US robotics sector, announced funding for six new technology projects in 2024, focusing on advancements in AI robotics, rapid re-tasking, and multi-robot collaboration. These initiatives aim to enhance the agility and efficiency of robotic systems in manufacturing environments.

The ongoing push towards Industry 4.0 and smart manufacturing is encouraging companies to invest in automation solutions that improve productivity and reduce operational costs. The demand for customization in manufacturing processes is driving the need for versatile and adaptable end effectors capable of handling a variety of tasks. The availability of skilled labor and strong R&D capabilities further fosters innovation in developing more intelligent and efficient end effectors. Additionally, the National Science Foundation (NSF) awarded US\$ 42.4 million in grants to support semiconductor research and development, reinforcing the integration of robotics with advanced semiconductor technologies.

Company Profiles

Key players in the North America Robot End-Effector Market include ABB Ltd, Kuka AG,

Festo SE & Co. KG, J. Schmalz GmbH, Piab AB, SCHUNK GmbH & Co. KG, Zimmer Group, Staubli International AG, SMC Corporation, and DESTACO. These companies are employing various strategies, including expansion, product innovation, and mergers and acquisitions, to deliver innovative products and enhance their market share.

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