

INDUSTRY OVERVIEW

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SOURCES OF INFORMATION

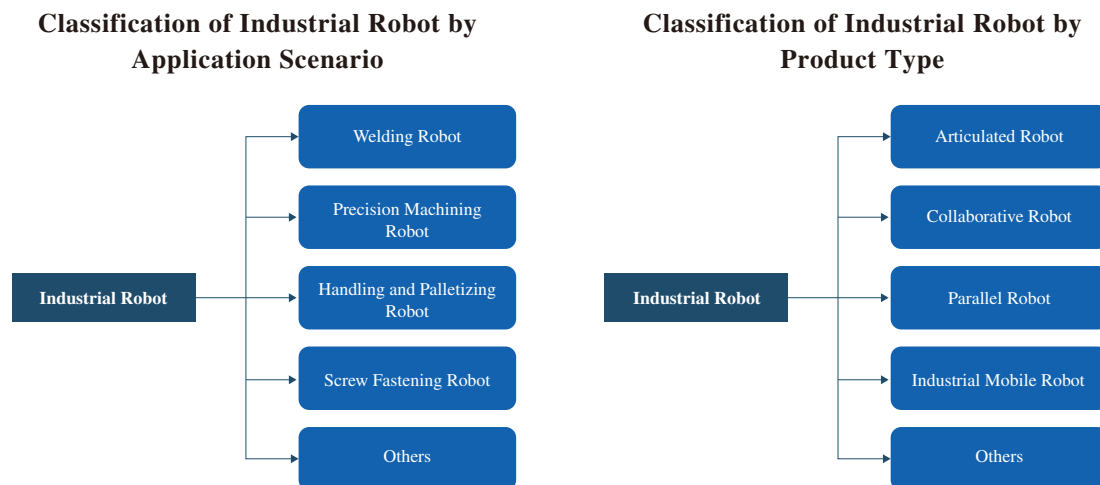
We engaged Frost & Sullivan, an independent market research consultant, to conduct an analysis of, and to prepare a report on global and China’s industrial robot and intelligent industrial robot industry for the use in this Document, which was commissioned by us for a fee of RMB690,000. Except as otherwise noted, all of the data and forecasts contained in this section are derived from the F&S Report. The Frost & Sullivan Report has been prepared by Frost & Sullivan independently without any influence from us or other interested parties.

ANALYSIS OF INDUSTRIAL ROBOT AND INTELLIGENT INDUSTRIAL ROBOT MARKET

Definition and Classification of Industrial Robot

Industrial robots are multi-jointed manipulators or multi-degree-of-freedom machine systems designed for industrial applications. Capable of automated operation through self-contained power and control capabilities, they exhibit programmable and versatile characteristics, performing tasks such as welding, handling, and assembly across three or more axes, and are widely deployed in manufacturing, logistics, and related fields.

Industrial robots can be categorized based on their scenario into welding robots, precision machining robots, handling and palletizing robots, screw fastening robots and others. Based on product type, industrial robots can be categorized into articulated robots, collaborative robots, parallel robots, industrial mobile robots, and others.



Source: Frost & Sullivan

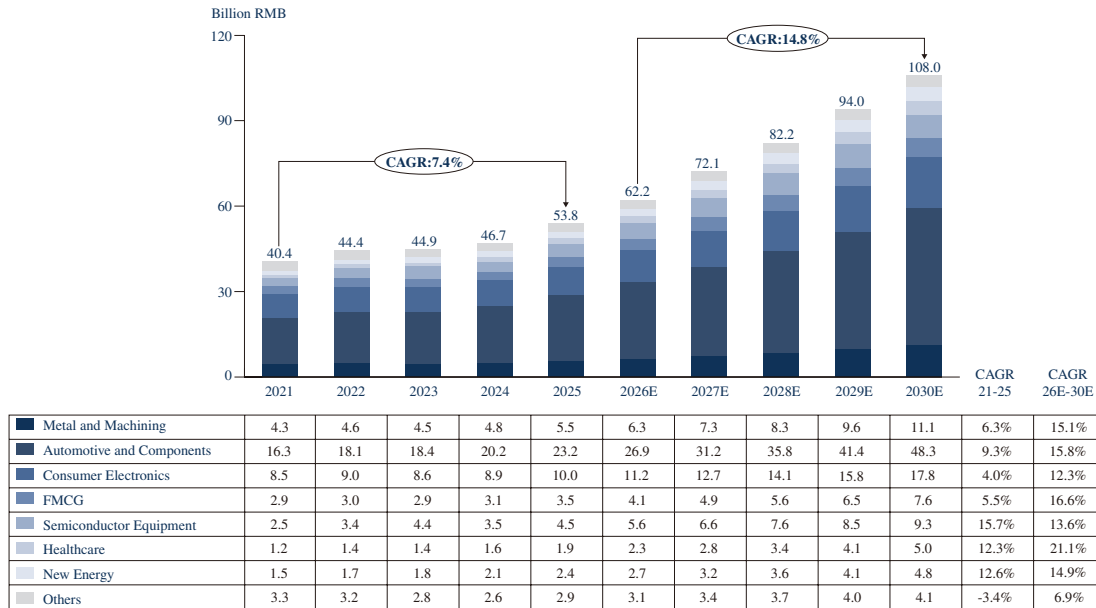
Note: articulated robots include four-axis robots, six-axis robots, etc.

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Market Size of Industrial Robot Market

China’s industrial robot market exhibited high growth, expanding from RMB40.4 billion in 2021 to RMB53.8 billion in 2025, achieving a CAGR of 7.4% during this period. As downstream application scenarios and market demand continue to expand, the market is projected to accelerate further, reaching RMB108.0 billion by 2030 with a CAGR of 14.8% from RMB62.2 billion in 2026.

Market Size of Industrial Robot Market (revenue breakdown by industry), China, 2021-2030E



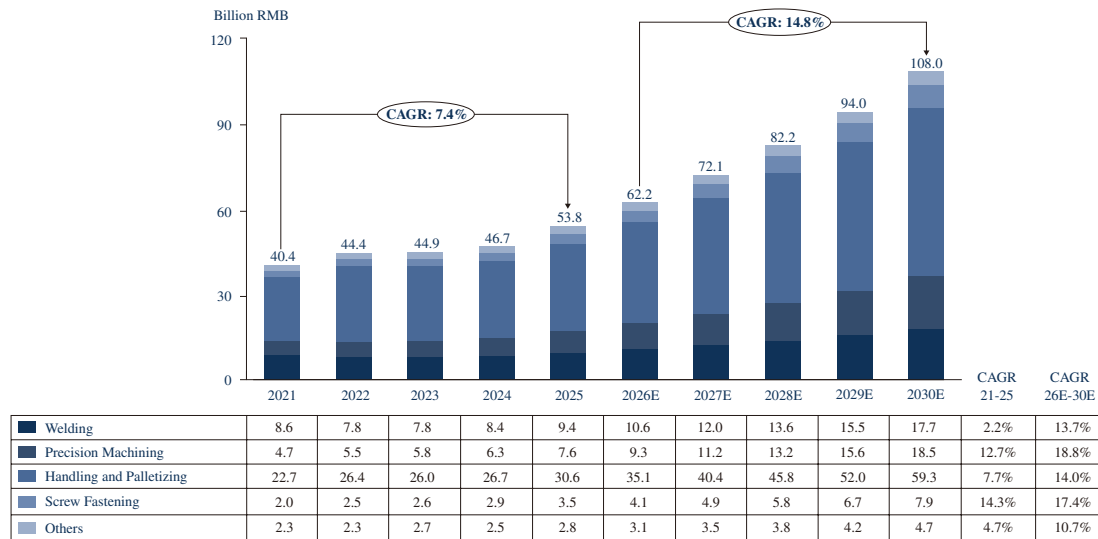
Source: Frost & Sullivan

- Metal and Machining:** The metal and machining sector has maintained continuous growth, expanding from RMB4.3 billion in 2021 to RMB5.5 billion in 2025, reflecting a CAGR of 6.3%. Growth is supported by manufacturers seeking to enhance precision and efficiency through robotic welding, cutting, and machining to address higher demands on the precision, efficiency, and consistency of production processes. The sector is projected to reach RMB11.1 billion by 2030, with a CAGR of 15.1% from 2026, as industrial upgrades and demand for advanced and intelligent manufacturing continue to drive adoption.
- Automotive and Components:** Automotive and components remained the largest sector in industrial robot market, fueled by China’s leadership in electric vehicle production and automotive assembly automation. Its market size grew from RMB16.3 billion in 2021 to RMB23.2 billion in 2025 with a CAGR of 9.3%, and is projected to reach RMB48.3 billion by 2030 with a CAGR of 15.8%, driven by electric vehicle battery assembly and lightweight component handling.
- Consumer Electronics:** Consumer electronics demonstrated steady growth, with market size expanding from RMB8.5 billion in 2021 to RMB10.0 billion in 2025 with a CAGR of 4.0%, supported by demand for smartphones, wearables, and the development of automated assembly. The sector is forecasted to grow to RMB17.8 billion by 2030 with a CAGR of 12.3%, driven by 5G adoption and miniaturization trends of components.
- FMCG:** FMCG showed notable growth, fueled by the need for standardized production and compliance with stringent food safety regulations. The market size expanded from RMB2.9 billion in 2021 to RMB3.5 billion in 2025 with a CAGR of 5.5%. By 2030, the sector is projected to reach RMB7.6 billion with a CAGR of 16.6% from 2026, driven by automation in snack packaging, dairy processing, and beverage filling lines.

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- Healthcare:** Healthcare sector increased from RMB1.2 billion in 2021 to RMB1.9 billion in 2025 with a CAGR of 12.3%, driven by demand for precision medicine and lab automation. The sector is expected to maintain continuous growth of CAGR 21.1%, reaching RMB5.0 billion by 2030 as hospitals and labs prioritize contactless and precision-driven workflows.

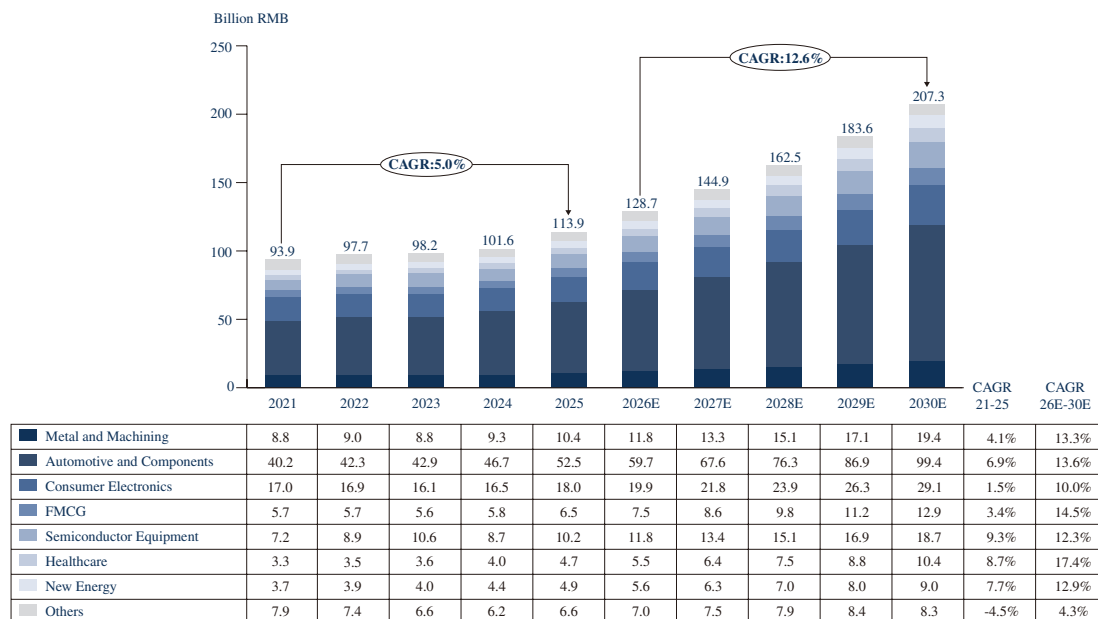
Market Size of Industrial Robot Market (revenue breakdown by scenario), China, 2021-2030E



Source: Frost & Sullivan

Global industrial robot market exhibited high growth, expanding from RMB93.9 billion in 2021 to RMB113.9 billion in 2025, achieving a CAGR of 5.0% during this period. As downstream application scenarios and market demand continue to expand, the market is projected to accelerate further, reaching RMB207.3 billion by 2030 with a CAGR of 12.6% from RMB128.7 billion in 2026.

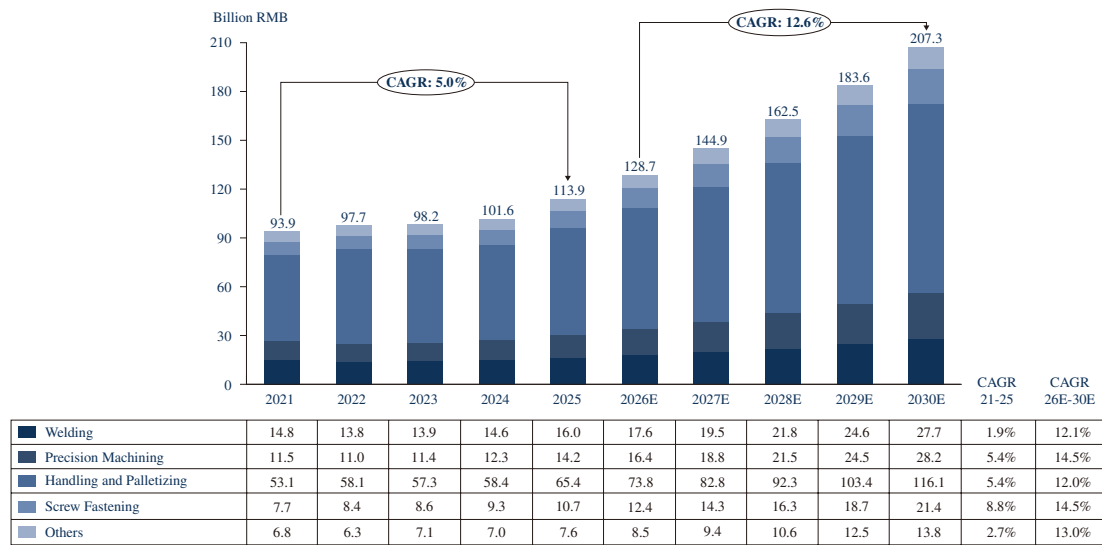
Market Size of Industrial Robot Market (revenue breakdown by industry), Global, 2021-2030E



Source: Frost & Sullivan

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Market Size of Industrial Robot Market (revenue breakdown by scenario), Global, 2021-2030E



Source: Frost & Sullivan

Market Size of Intelligent Industrial Robot Market

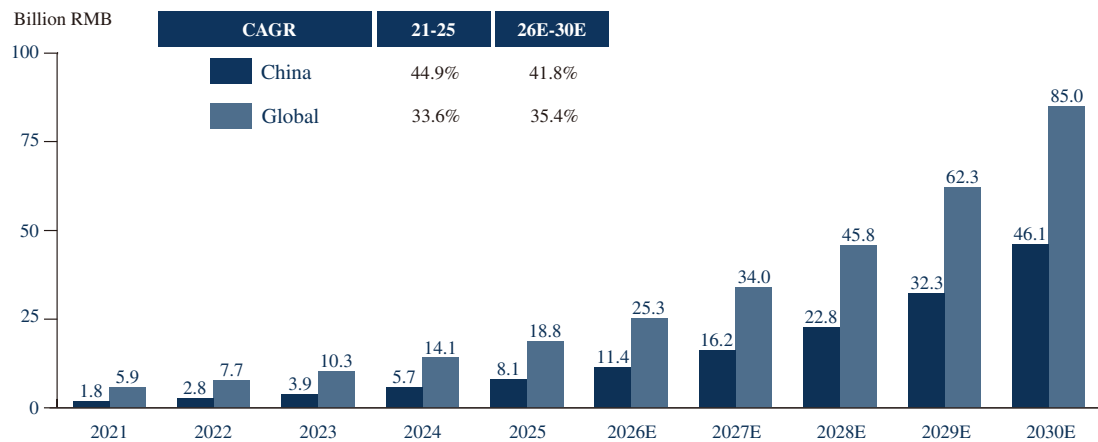
Intelligent industrial robots represent a category of advanced equipment specifically designed for industrial applications, utilizing artificial intelligence, machine learning, computer vision, and laser sensors to simulate key human capabilities in advanced perception, response and adaptation, and autonomous decision-making through collaboration between hardware and software.

The global intelligent industrial robot market grew from RMB5.9 billion in 2021 to RMB18.8 billion in 2025, achieving a CAGR of 33.6% during this period. Fueled by the rising penetration rate of industrial automation, the continued emergence of new markets, and enhancing demand in multiple downstream scenarios, the market is projected to maintain continuous growth, reaching RMB85.0 billion by 2030 with a CAGR of 35.4% from 2026 onward.

China's intelligent industrial robot market exhibited high growth, expanding from RMB1.8 billion in 2021 to RMB8.1 billion in 2025, achieving a CAGR of 44.9% during this period. As labor shortages and cost pressures continuously compel the enhancement of industrial automation, coupled with technological innovation and synergistic development of industrial chains, China's intelligent industrial robot market will continue to grow, reaching RMB46.1 billion by 2030 with a CAGR of 41.8% from RMB11.4 billion in 2026.

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Market Size of Intelligent Industrial Robot Market (by revenue), Global and China, 2021-2030E

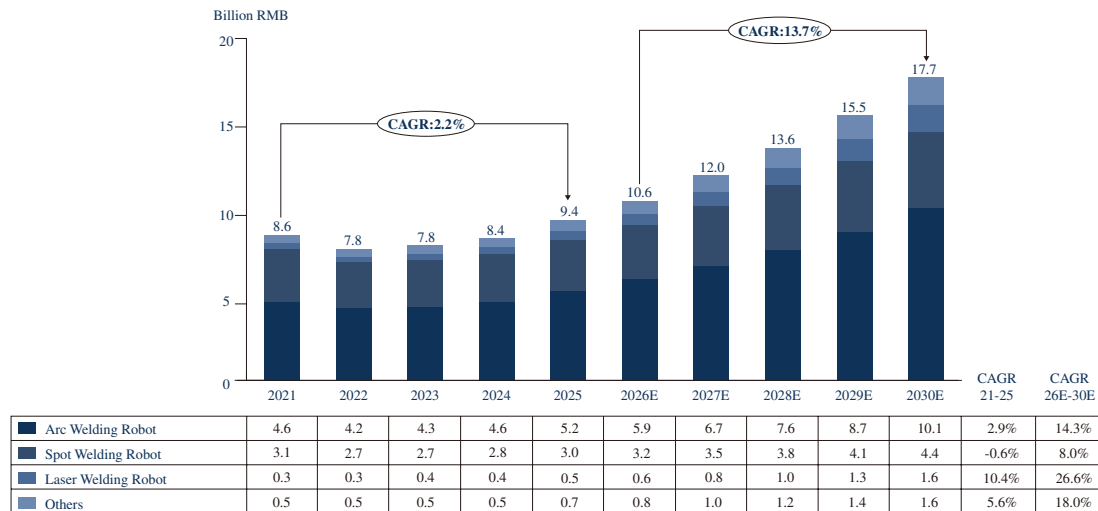


Source: Frost & Sullivan

Market Size of Welding Robot Market

China's welding robotics market exhibited high growth, expanding from RMB8.6 billion in 2021 to RMB9.4 billion in 2025, achieving a CAGR of 2.2% during this period. As downstream application scenarios and market demand continue to expand, the market is projected to accelerate further, reaching RMB17.7 billion by 2030 with a CAGR of 13.7% from RMB10.6 billion in 2026.

Market Size of Welding Robot Market (revenue breakdown by product type), China, 2021-2030E



Source: Frost & Sullivan

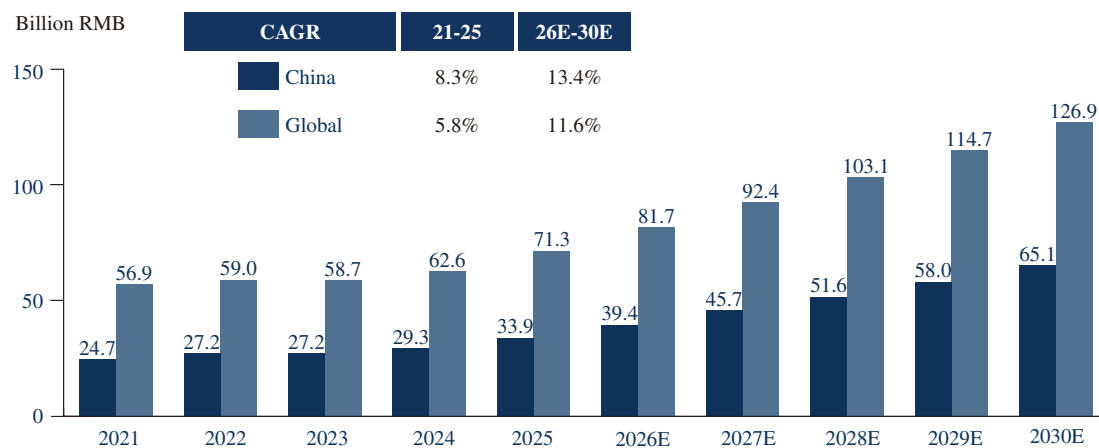
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Market Size of Six-axis Robot Market

The global six-axis robot market grew from RMB56.9 billion in 2021 to RMB71.3 billion in 2025, achieving a CAGR of 5.8% during this period. Driven by expanding usage of robotic arms in automotive and electronics manufacturing, rising demand for precision automated assembly, and continuous innovation in motion control, the market is projected to maintain continuous growth, reaching RMB126.9 billion by 2030 with a CAGR of 11.6% from 2026 onward.

China’s six-axis robot market expanded from RMB24.7 billion in 2021 to RMB33.9 billion in 2025, achieving a CAGR of 8.3% during this period. As industrial automation adoption continues to expand, the market is projected to accelerate further, reaching RMB65.1 billion by 2030 with a CAGR of 13.4% from RMB39.4 billion in 2026.

Market Size of Six-axis Robot Market (by revenue), Global and China, 2021-2030E



Note: The market size of six-axis robot does not include collaborative robots.

Source: Frost & Sullivan

Market Size of Collaborative Robot Market

The global collaborative market grew from RMB3.7 billion in 2021 to RMB10.0 billion in 2025, achieving a CAGR of 27.7% during this period, and is projected to achieve year-over-year growth rate of 34.0% in 2026. Driven by accelerated adoption of AI-integrated collaboratives, breakthroughs in cost-effective modular designs, and enhancing demand from enterprises seeking flexible automation solutions amid labor shortages and supply chain resilience pressures, the market is projected to maintain continuous growth, reaching RMB49.9 billion by 2030 with a CAGR of 39.0% from 2026 onward.

China’s collaborative market exhibited high growth, expanding from RMB1.1 billion in 2021 to RMB3.0 billion in 2025, achieving a CAGR of 27.5% during this period. As downstream application scenarios and market demand continue to expand, the market is projected to accelerate further, reaching RMB18.7 billion by 2030 with a CAGR of 46.2% from RMB4.1 billion in 2026.

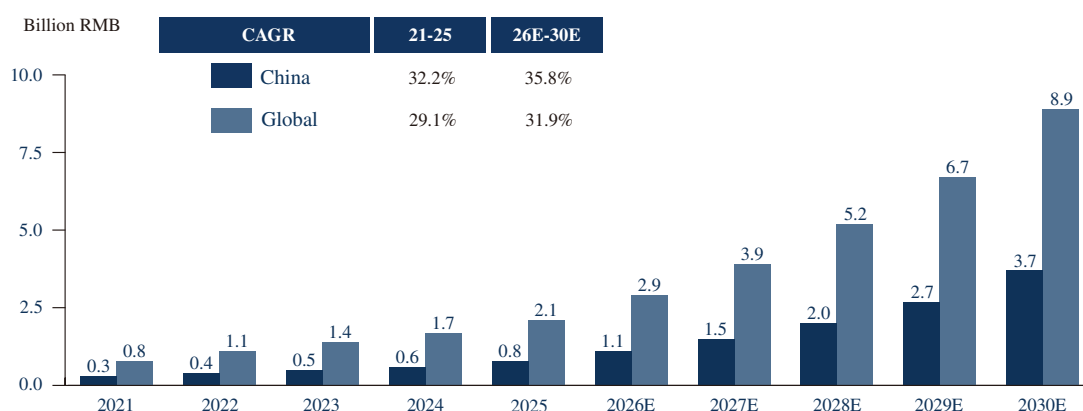
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Market Size of Embodied Industrial Robot

Embodied robots are intelligent physical systems, including both humanoid and non-humanoid forms, equipped with a physical body that enables them to perceive, interact with, and manipulate the environment. They integrate multimodal sensing, autonomous decision-making, and adaptive execution capabilities to perform complex tasks in real-world settings, moving beyond pre-programmed actions to achieve adaptive collaboration with human workflows and machinery.

The development of embodied industrial robots is driven by advances in AI and sensing technologies, growing demand for flexible automation, and the need for enhanced human-machine collaboration in complex production environments. The global revenue of embodied industrial robot is expected to increase from RMB2.9 billion in 2026 to RMB8.9 billion in 2030, representing a CAGR of 31.9%. Meanwhile, from 2026 to 2030, the revenue of embodied industrial robot in China is projected to increase from RMB1.1 billion to RMB3.7 billion, with a CAGR of 35.8%.

Market Size of Embodied Industrial Robot Market (by revenue), Global and China, 2021-2030E



Source: Frost & Sullivan

Market Drivers of Industrial Robot Market

- Rising Automation Demand in Manufacturing:** The global manufacturing sector is increasingly accelerating automation adoption driven by tangible cost and labor constraints, aiming to enhance production efficiency, reduce labor reliance, and improve product quality. Rising labor costs and tightening labor supply in key manufacturing hubs, particularly in China, have made automation a more economically necessary solution rather than a discretionary upgrade. This is further reinforced by demographic trends, with the global population aged 65 and above increasing from 9% in 2020 to 12% in 2024 and projected to reach 17% by 2050, indicating a structural decline in the working-age population. As a result, demand for industrial robots is expanding across core sectors such as automotive and electronics, driven by their ability to enable continuous operation, consistent output, and lower defect rates. Automation is also increasingly supporting flexible and scalable production models, helping manufacturers remain competitive in cost-sensitive and rapidly evolving markets.
- Labor Cost and Workforce Structure Changes:** Rising labor costs and shortages of skilled workers in certain countries and regions are prompting enterprises to adopt industrial robots. These systems help alleviate human resource pressures by performing repetitive, hazardous, or high-precision tasks that are difficult to staff. This trend is particularly pronounced in industries where operational continuity and production stability are critical, further reinforcing the role of automation as a long-term strategic solution.

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- ***Government Policies and Strategic Support:*** Governments worldwide are introducing industrial policies, tax incentives, and financial support programs to promote the development and adoption of industrial robots. In January 2024, China’s Ministry of Industry and Information Technology, together with six other government departments, issued the “Implementation Opinions on Promoting the Innovative Development of Future Industries”, which focus on achieving breakthroughs in high-end equipment products such as embodied robots and advancing research, development, and application in areas including intelligent manufacturing. Such measures aim to accelerate industrial upgrading, strengthen manufacturing competitiveness, and encourage innovation. By lowering investment barriers and fostering a favorable business environment, policy initiatives are contributing to faster industrialization of robotics and deeper market integration.

Development Trends of Industrial Robot Market

- ***Enhanced Multifunctionality and Flexibility:*** Industrial robots are evolving toward higher versatility and flexibility, enabling adaptation to different production tasks and process requirements. This trend aligns with the growing prevalence of multi-variety, small-batch manufacturing models, where quick reconfiguration and task-switching reduce downtime and improve operational efficiency. Enhanced software control, modular hardware, and adaptive tooling allow a single robot platform to handle multiple applications across varying production environments, helping manufacturers respond faster to changing market demands while maximizing equipment utilization and reducing total ownership costs.
- ***Expanding Cross-Industry Applications:*** The application scope of industrial robots is expanding beyond traditional manufacturing to emerging sectors such as logistics, healthcare, and agriculture. These industries present diverse requirements for automation, precision, and efficiency, driving the adoption of robots with advanced sensing, AI-based control, and domain-specific capabilities. In logistics, robots support order fulfillment and warehouse operations; in healthcare, they assist in device manufacturing and hospital automation; in agriculture, they enhance planting, harvesting, and quality inspection processes. This diversification reduces reliance on a single industry, stabilizes demand, and fosters long-term market growth.
- ***Shift from Specialized to Compatible Products:*** Industrial robots are transitioning from highly specialized products to platforms with broader functional compatibility. Continuous improvements in functions, interface standards, and adaptability are expected to enable deployment across multiple industries and scenarios without extensive customization. This evolution can reduce replacement and deployment costs for end users, extend product life cycles, and expand the addressable market for suppliers.

Market Challenges of Industrial Robot Market

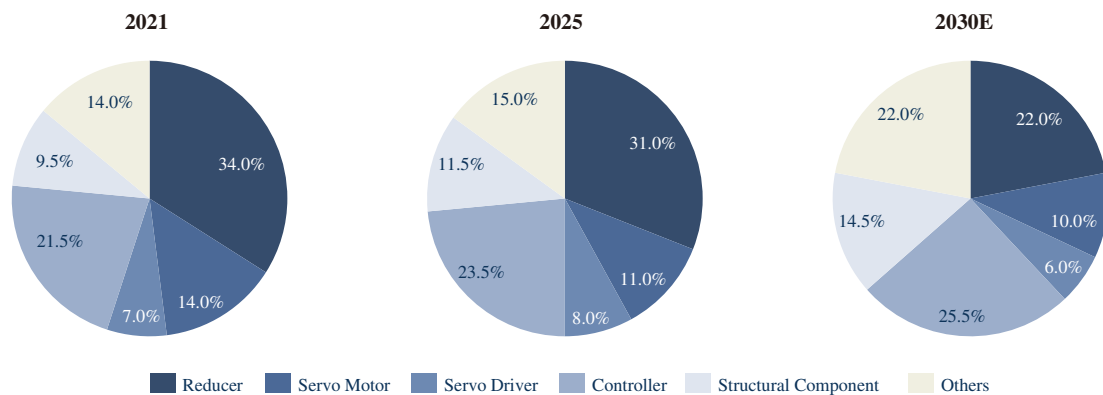
- ***High Initial Investment and Cost Pressure:*** The industrial robots market faces challenges related to high upfront investment costs, including robot hardware, system integration, software, and ongoing maintenance. For small and medium-sized enterprises, these costs can limit adoption despite long-term efficiency gains. In addition, rising prices of key raw materials and components such as precision reducers, controllers, and sensors may increase overall system costs. Globally, cost sensitivity in certain manufacturing sectors continues to constrain large-scale deployment, particularly in regions with relatively lower labor costs or limited access to financing.
- ***Technical Complexity and Workforce Adaptation:*** The deployment of industrial robots requires specialized expertise in system integration, programming, and maintenance, creating challenges in workforce readiness. Many manufacturers face shortages of skilled engineers and technicians capable of operating and maintaining advanced robotic systems. Integration complexity also increases when robots must work alongside legacy equipment or be customized for specific production processes. These challenges can extend implementation timelines, raise operational risks, and reduce the speed at which productivity benefits are realized, both in China and in global markets.

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Cost Analysis of Industrial Robot

The cost structure of industrial robot components is shifting as mechanical parts gradually decline in cost while intelligent components account for a growing share of total value. In 2021, reducers and servo systems together represented a large portion of costs, reflecting reliance on imported components and high technical barriers. By 2025, domestic substitution and scale effects had reduced the cost share of key mechanical components, while lightweight design requirements increased the share of structural parts. Looking ahead to 2030, further modularization and manufacturing optimization are expected to lower mechanical component costs, while controllers and advanced structural components will account for a higher share, reflecting continued progress in intelligence, sensing, and materials technologies.

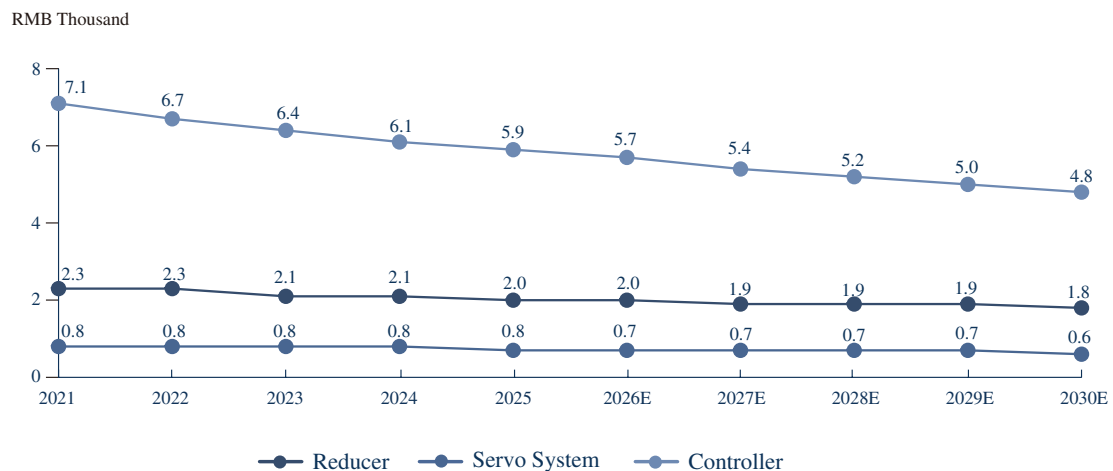
Cost Analysis of Industrial Robot Components, China, 2021, 2025, 2030E



Source: Frost & Sullivan

Industrial robot components primarily include key core parts such as controllers, servo systems, and reducers, which together form the essential hardware foundation of robot operation and motion control. Overall, prices across all three components exhibit a steady downward trend over the period, indicating gradual cost reductions in core industrial robot hardware driven by technological advancement, scale effects, and supply chain optimization.

Average Price of the Industrial Robot Components, China, 2021-2030E



Source: Frost & Sullivan

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COMPETITIVE ANALYSIS OF INDUSTRIAL ROBOT MARKET

Competitive Landscape of Industrial Robot Market

In the industrial and welding robots markets, overseas companies such as Company E, Company F, Company G, Company H, and Company I, hold a relatively strong market position as first movers, particularly in the high-end welding and industrial automation applications, while domestic players such as the Company, Company A, Company B, Company C, and Company D are growing rapidly and competing with overseas players mainly through localized solutions and services, faster customization cycle, cost efficiency of products, etc. In collaborative robots, overseas companies benefit from early market entry, while domestic companies are rapidly closing the gap through faster product iteration. The embodied robot segment remains nascent, with both overseas and domestic players focusing on technological development and early application exploration.

The average selling price (ASP) of domestic welding robots generally ranges from approximately RMB50k to 70k per unit depending on the payload, configuration, and application complexity, while the ASP of overseas welding robots generally ranges from approximately RMB200k to 250k per unit.

Ranking of Welding Robot Companies

With the revenue of RMB170 million, we are the largest Chinese welding robot company in terms of related revenue in 2025. The major Chinese welding robot companies in terms of revenue mainly consist of Company A, Company B, Company C, and Company D.

TOP 5 Chinese Welding Robot Companies (by revenue)*, Global, 2025

Rank	Company	Listing Status	Welding Robot Revenue (Million RMB)
1	The Company	Not Listed	170
2	Company A	Listed	154
3	Company B	Listed	124
4	Company C	Listed	113
5	Company D	Listed	97

Source: Frost & Sullivan

*Note: Refer to revenue of welding robots manufactured by Chinese companies, excluding overseas brands.

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TOP 5 Welding Robot Companies (by revenue), Global, 2025

Rank	Company	Listing Status	Welding Robot Revenue (Billion RMB)
1	Company E	Listed	2.9
2	Company F	Listed	2.6
3	Company G	Listed	2.3
4	Company H	Not Listed	2.2
5	Company I	Listed	1.6

Source: Company reports, Frost & Sullivan

Entry Barriers of Industrial Robot Market

- **Technology Barrier:** The industrial robot market requires advanced expertise in areas such as precision mechanics, motion control, AI algorithms, sensor fusion, and real-time computing. Developing competitive products often demands long R&D cycles, specialized know-how, and integration of multiple complex subsystems, which creates high technical thresholds for new entrants. Companies with mature platforms and proprietary technologies benefit from accumulated data, optimized algorithms, and proven system architectures, making it difficult for new players to match performance, reliability, and cost efficiency in a short timeframe.
- **Brand Barrier:** Brand reputation plays a significant role in the industrial robot market, particularly in sectors where production uptime, precision, and safety are critical. Established brands often benefit from customer trust built through years of proven performance, consistent quality, and reliable after-sales service. This trust reduces the perceived risk for customers and influences procurement decisions, especially in capital-intensive projects. New entrants without a recognized track record face challenges in convincing customers to switch suppliers, even if they offer competitive specifications or pricing.
- **Talent Barrier:** The development and deployment of industrial robots require a multidisciplinary talent pool covering mechanical engineering, electronics, embedded systems, AI, and industrial process optimization. Skilled professionals in these fields are in high demand and often concentrated in leading companies or research institutions. Recruiting and retaining such talent requires competitive compensation, challenging projects, and an established innovation environment, which can be difficult for new entrants to provide.