

INDUSTRY OVERVIEW

The information and statistics set out in this section and other sections of this document were extracted from the report prepared by Frost & Sullivan, which was commissioned by us, and from various official government publications and other publicly available publications. We engaged Frost & Sullivan to prepare the Frost & Sullivan Report, an independent industry report, in connection with the [REDACTED]. However, the information from official government sources has not been independently verified by us, the Sole Sponsor, [REDACTED], [REDACTED], [REDACTED], [REDACTED], [REDACTED], any of their respective directors and advisers, or any other persons or parties involved in the [REDACTED], and no representation is given as to its accuracy. For more details of the risks relating to our industry, see “Risk Factors” in this Document.

SOURCES OF THE INDUSTRY INFORMATION

We commissioned Frost & Sullivan to analyze and prepare a report regarding global smart garden equipment market, global smart pool equipment market, and global intelligent pool cleaning robot market during the period of 2020 to 2029. Frost & Sullivan is an independent global consulting firm, which was founded in 1961 in New York, offering industry research and market strategies and provides growth consulting and corporate training. We agreed to pay a commission fee of RMB500,000 to Frost & Sullivan pursuant to a service agreement reached by arm’s length negotiation. Except as otherwise noted, all of the data and forecasts contained in this section are derived from the Frost & Sullivan Report.

In preparing for the report, Frost & Sullivan conducted both primary and secondary research and relied on various sources. The primary research was conducted via interviews with key industry experts and leading industry participants. The secondary research involved analysis of market data obtained from several publicly available data sources, such as International Monetary Fund (“IMF”) and other industrial associations. The market projections in the Frost & Sullivan Report are based on the following key assumptions: (i) the global social, economic, and political environment are expected to remain stable during the forecast period; (ii) global economic and industrial development are likely to maintain a steady growth in the forecast period; (iii) related industry key drivers are likely to drive the growth of global smart pool equipment market and global intelligent pool cleaning robot market in the forecast period; and (iv) there is no extreme force majeure or industry regulation in which the market may be affected dramatically or fundamentally.

Our Directors confirm that, to the best of their knowledge, after making reasonable inquiries and exercising reasonable care, there is no material adverse change in the market information since the date of the relevant data contained in the Frost & Sullivan Report which may qualify, contradict or have an impact on the information in this section.

GLOBAL SMART GARDEN EQUIPMENT MARKET OVERVIEW

Definition and Classification of Global Smart Garden Equipment

Smart garden equipment refers to intelligent robotic and automated solutions designed to manage key outdoor residential and commercial garden functions, including pool ecosystem management, landscape maintenance, and outdoor lighting control, with minimal human intervention. Such equipment integrates sensing, navigation and intelligent control technologies to enhance operational efficiency, precision and reliability in garden environments.

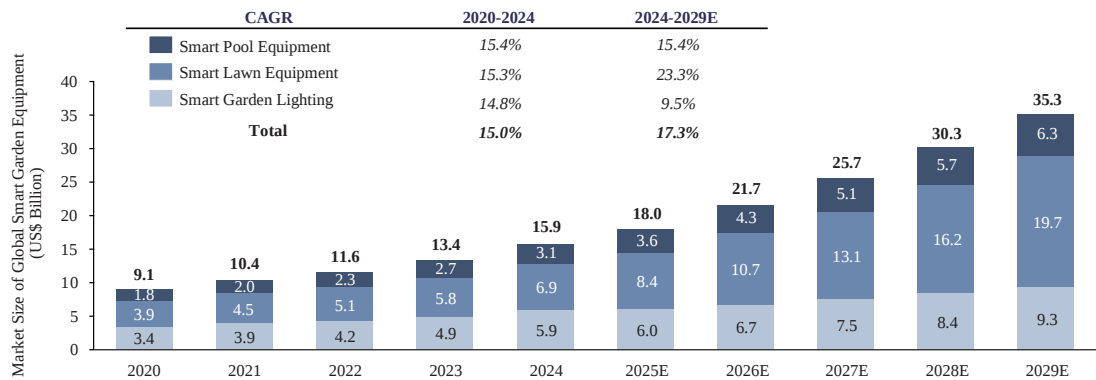
Smart garden equipment currently comprises the following major commercial categories: Smart pool equipment (智能泳池設備) designed to deliver integrated, intelligent pool ecosystem management solutions for private and public swimming pools, including smart pool energy management products (智能泳池節能產品), intelligent pool robotic products (智能泳池機器人產品) and smart pool water treatment systems (智能泳池水處理系統). Smart lawn equipment (智能草坪設備), designed for autonomous outdoor ground maintenance and security management primarily in lawn areas within garden environments, including intelligent lawn mowing robots (智能割草機器人), snow removal robots (除雪機器人), garden cleaning robots (庭院清潔機器人), and intelligent security systems (智能安防設備). Smart garden lighting (智能庭院照明), designed for intelligent outdoor illumination management to enhance safety, convenience, and energy efficiency in garden settings.

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Market Size of Global Smart Garden Equipment Market

The global smart garden equipment market expanded from US\$9.1 billion in 2020 to US\$15.9 billion in 2024 and is expected to reach US\$35.3 billion by 2029, representing a CAGR of 17.3% over the period from 2024 to 2029. This sustained growth is driven by continued technological innovation, rising household purchasing power, and increasing adoption of intelligent and automated solutions in garden and landscaping-related living environments.

Market Size of Global Smart Garden Equipment Market, 2020-2029E



Source: Frost & Sullivan

GLOBAL SMART POOL EQUIPMENT MARKET OVERVIEW

Definition and Classification of Global Smart Pool Equipment Market

The global smart pool equipment market comprises automated and intelligent technologies designed to manage energy management, cleaning automation and water treatment. By integrating sensing, control and connectivity technologies, smart pool equipment improves operational efficiency, maintains stable water quality, enhances user convenience and reduces manual intervention in both residential and commercial pool environments. The market is broadly categorized as follows: **Smart pool energy management products** improve the operational efficiency of pool systems through energy-efficient technologies. Typical configurations include smart pool water pumps (智能泳池水泵) and smart pool heat pumps (智能泳池热泵). Smart pool water pumps, also known as inverter pool water pumps, automatically adjust motor speed based on real-time operating conditions to optimize water circulation and reduce energy consumption. Smart pool heat pumps, also known as inverter pool water pumps, regulate pool water temperature through variable-frequency compressors and fans, enabling more precise temperature control and improved efficiency. **Intelligent pool robotic products** provide automated cleaning and intelligent management of pool environments. Typical configurations include intelligent pool cleaning robots (泳池清潔機器人), intelligent swim jets (智能冲浪器) and electronic control products (电子控制产品). Intelligent pool cleaning robots automatically remove debris and contaminants from pool floors and walls through autonomous navigation technologies. Intelligent swim jets generate controllable water currents for aquatic sports and entertainment and incorporate basic sensing and control capabilities to monitor operating conditions and trigger protective responses under abnormal situations. **Smart pool water treatment systems** enable smart pool water treatment systems by integrating circulation, filtration and sanitization functions. Typical configurations include smart salt chlorinator (智能盐氯机) and smart multiport valve (智能砂缸头), which work together with circulation systems to maintain stable water quality conditions. These systems automatically monitor and regulate parameters such as chlorine generation, filtration cycles and water flow.

Value Chain of Global Smart Pool Equipment

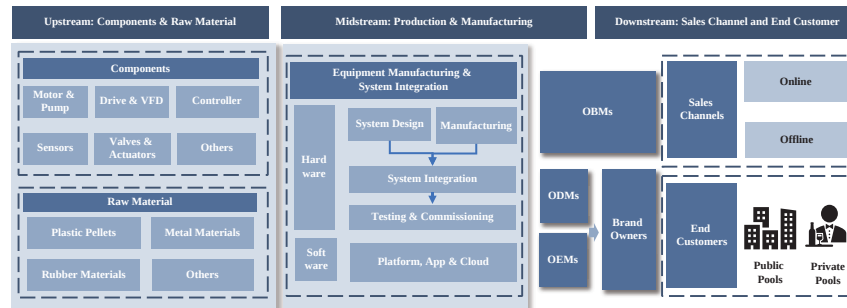
The global smart pool equipment market value chain comprises three primary segments: upstream components and raw material suppliers, midstream production and manufacturing, and downstream sales channel and end customer.

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Upstream participants supply core components, including motor & pump, drive & variable frequency drive (“VFD”), controllers, sensors, valves and actuators, together with raw materials such as plastic pellets, metal materials, rubber materials, and other inputs.

Midstream covers both equipment manufacturing and system integration, combining hardware production with software capabilities. Manufacturing companies typically include OBMs, ODMs, and OEMs. OBMs manage the full value chain — from product design and development to manufacturing and sales — under their own brand. ODMs provide both design and production services, while OEMs manufacture products based on client-provided designs.

Downstream consists of brand owners, sales channels, and end consumers. Sales channels are commonly classified by online and offline. End customers include public pools and private pools.

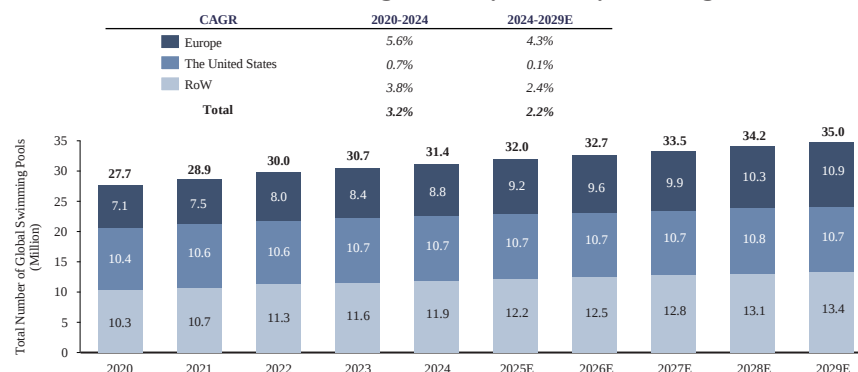


Source: Frost & Sullivan

Market Size of Global Swimming Pools

The total number of global swimming pools, including both private and public pools, reached approximately 31.4 million units in 2024 and is projected to rise further to 35.0 million units by 2029, representing a CAGR of 2.2% over the period. This growth is primarily supported by ongoing urbanization and the expanding stock of residential properties, and strong demand from large residential pools and commercial installations such as hotels, resorts, and community facilities, where faster heating and stable performance under high-load conditions are essential. In 2024, the United States and Europe were the two largest pool markets, accounting for around 34.0% and 28.0%, respectively, of the global total. Further growth is expected in the United States and Europe in the coming years, and the Rest of the World (“RoW”) is also expected to expand, particularly in the Asia-Pacific region, as pool penetration increases and residential and hospitality developments continue to progress.

Total Number of Global Swimming Pools by Country and Region, 2020-2029E



Note: RoW refers to economies other than those separately presented in a given analysis, including Southeast Asia, Latin America, the Middle East, Africa, and Oceania.

Source: The European Union of Swimming Pool and Spa Associations (“EUSA”), Frost & Sullivan

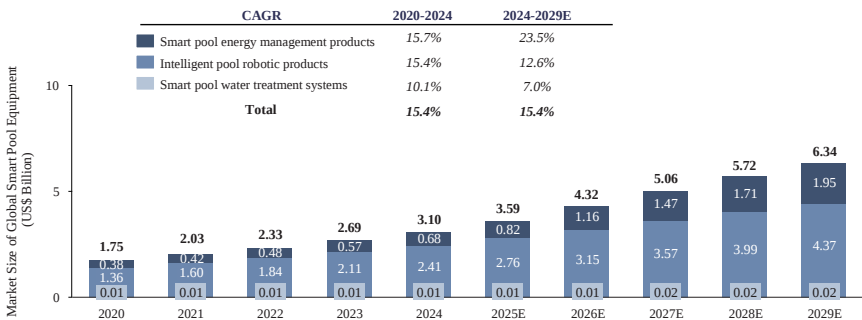
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Market Size of Global Smart Pool Equipment

The market size of global smart pool equipment increased from approximately US\$1.75 billion in 2020 to US\$3.10 billion in 2024, representing a CAGR of 15.4% during the period. The market is expected to further grow to approximately US\$6.34 billion by 2029, implying a CAGR of 15.4% from 2024 to 2029.

The penetration rate of smart pool equipment improved from 11.7% in 2020 to approximately 14.9% in 2024 and is projected to further increase to approximately 21.6% by 2029. The rising penetration is primarily driven by (i) growing consumer preference for energy-efficient and inverter-based systems, (ii) increasing demand for automated water quality monitoring, cleaning and remote control capabilities, (iii) replacement and upgrade cycles of the existing installed base of swimming pools, and (iv) the continued adoption of IoT-enabled and integrated pool management solutions across residential and commercial applications.

Market Size of Global Smart Pool Equipment, 2020-2029E



Source: Frost & Sullivan

Smart pool heat pumps represent one of the major product categories within the smart pool energy management products market. This segment increased from US\$331.2 million in 2020 to US\$500.0 million in 2024, recording a CAGR of 10.8% from 2020 to 2024, and is expected to further expand to US\$902.0 million by 2029, representing a CAGR of 12.5% from 2024 to 2029. Meanwhile, the penetration rate of smart pool heat pumps as a share of total pool heat pump shipments increased from 45.0% in 2020 to 50.0% in 2024 and is expected to further rise to 65.6% by 2029, reflecting the accelerating transition toward energy-efficient variable-speed technologies.

Smart pool water pumps are also experiencing rapid growth. This segment increased from US\$47.5 million in 2020 to US\$180.0 million in 2024, recording a CAGR of 39.5% from 2020 to 2024, and is expected to further expand to US\$1,050.0 million by 2029, representing a CAGR of 42.3% from 2024 to 2029. However, the penetration rate as a share of the total pool water pump shipments remains relatively low, reaching approximately 10.0% in 2024 and expected to increase to around 46.7% by 2029, indicating significant room for further adoption in the future.

Market Drivers of Global Smart Pool Equipment Market

Growing demand for integrated smart pool management solutions. Pool owners and operators are increasingly seeking integrated solutions that simplify pool maintenance, improve operational efficiency and enhance user experience. Smart pool equipment enables automated monitoring, cleaning and water quality management with minimal human intervention. As residential pool owners, hospitality operators and aquatic facilities prioritize convenience, reliability and operational efficiency, demand for comprehensive smart pool solutions continues to expand globally.

Rising adoption of intelligent and automated maintenance technologies. Technological advancements in sensors, connectivity and control systems are accelerating the adoption of intelligent pool equipment capable of performing maintenance tasks autonomously. Intelligent pool cleaners, filtration and water treatment devices feature smart navigation, real-time monitoring and adaptive operation, allowing optimized performance and dynamic responses to pool conditions.

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Increasing focus on energy efficiency and optimized pool operations. Energy consumption represents a significant portion of pool operating costs, particularly for equipment such as pumps, heating systems and water treatment devices. Smart pool equipment solutions integrate energy-efficient technologies and intelligent control systems that optimize equipment operation based on real-time demand and environmental conditions. Growing awareness of operational cost management and sustainability is encouraging pool operators to adopt intelligent pool equipment solutions.

Future Trends of Global Smart Pool Equipment Market

Expansion of integrated smart pool ecosystem solutions. Future development of the smart pool equipment market is expected to increasingly focus on integrated ecosystem solutions that connect multiple pool devices within a unified intelligent management platform. Rather than operating as standalone equipment, products such as intelligent pool cleaning robots, water treatment systems, pumps, heaters and intelligent swim jets are gradually being integrated through central control systems and digital platforms. These solutions enable pool owners and operators to monitor equipment status, manage water quality and coordinate maintenance activities through a single interface.

Advancement of intelligent automation and adaptive technologies. Continuous improvements in sensing technologies and data processing capabilities are expected to further enhance the level of automation in smart pool equipment. Future smart pool solutions are likely to incorporate more advanced environmental sensing, intelligent navigation and adaptive control capabilities that allow equipment to automatically adjust operating modes according to real-time pool conditions. These developments will strengthen the role of intelligent solutions in delivering more efficient and reliable pool management.

Increasing connectivity and data-driven pool management solutions. The growing adoption of connectivity technologies and cloud-based platforms is expected to support the development of more data-driven smart pool solutions. Connected pool equipment can continuously collect operational data, enabling remote monitoring, predictive maintenance and performance optimization. Through integrated digital platforms and mobile applications, users will be able to manage multiple devices, analyze system performance and receive automated alerts or maintenance recommendations.

Competitive Landscape of Global Smart Pool Equipment Market

The global smart pool equipment market remains highly fragmented in 2024, characterized by the presence of numerous vendors across major geographies. International players compete across multiple regions, while PRC-based vendors such as the Group in China maintain strong local positions through region-specific portfolios and channel reach.

The top five PRC-based smart pool equipment manufacturers accounting for approximately 12.3% of the market share in terms of revenue in 2024. The Group was the largest PRC-based smart pool equipment manufacturer, with a global market share of 3.4% in terms of revenue of smart pool equipment.

Top Five PRC-based Manufacturer in terms of Revenue of Smart Pool Equipment (Global), 2024

Ranking	Smart Pool Equipment Manufacturers	Revenue of Smart Pool Equipment (US\$ Million)	Market Share (%)
1	The Group	104.3	3.4%
2	Group A	97.2	3.1%
3	Group B	71.6	2.3%
4	Group C	62.2	2.0%
5	Group D	47.1	1.5%
	Top five	382.4	12.3%
	Total	3,100.0	100.0%

Source: Frost & Sullivan

Notes:

- Group A is a private company founded in 2015 and headquartered in Guangdong Province. It is principally engaged in the development, production and sales of smart pool equipment, with smart pool robots as its core products.
- Group B is a private company founded in 2005 and headquartered in Tianjin. It is principally engaged in the development, production and sales of smart pool equipment, with smart pool robots as its core products.

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- Group C is a private company founded in 2011 and headquartered in Guangdong Province. It is principally engaged in the development, production and sales of heat pumps and related products.
- Group D is a private company founded in 2010 and headquartered in Guangdong Province. It is principally engaged in the development, production and sales of heat pumps and related products.

The top five PRC-based smart pool heat pump manufacturers accounting for approximately 49.7% of the market share in terms of revenue in 2024. The Group was the **largest** PRC-based smart pool heat pump manufacturer, with a global market share of 15.0% in terms of revenue of smart pool heat pump.

Top Five PRC-based Manufacturer in terms of Revenue of Smart Pool Heat Pump (Global), 2024

Ranking	Smart Pool Heat Pump Manufacturers	Revenue of Smart Pool Heat Pump (US\$ Million)	Market Share (%)
1	The Group	75.1	15.0%
2	Group C	62.2	12.4%
3	Group D	47.1	9.4%
4	Group E	40.8	8.2%
5	Group F	23.6	4.7%
Top five		248.8	49.7%
Total		500.0	100.0%

Source: Frost & Sullivan

Notes:

- Group E is a private company founded in 1999 and headquartered in Jiangsu Province. It is principally engaged in the development, production and sales of heat pump and related products.
- Group F is a NEEQ-listed company founded in 2005 and headquartered in Guangdong Province. It is principally engaged in the development, production and sales of heat pump and related products.

The top five PRC-based smart pool water pump manufacturers accounting for approximately 17.2% of the market share in terms of revenue in 2024. The Group was the **largest** PRC-based smart pool water pump manufacturer, with a global market share of 6.6% in terms of revenue of smart pool water pump.

Top Five PRC-based Manufacturer in terms of Revenue of Smart Pool Water Pump (Global), 2024

Ranking	Smart Pool Heat Pump Manufacturers	Revenue of Smart Pool Heat Pump (US\$ Million)	Market Share (%)
1	The Group	11.8	6.6%
2	Group G	10.3	5.7%
3	Group H	4.1	2.3%
4	Group I	3.2	1.8%
5	Group J	1.4	0.8%
Top five		30.8	17.2%
Total		180.0	100.0%

Source: Frost & Sullivan

Notes:

- Group G is an A-share listed Company founded in 1993 and headquartered in Guangdong Province. It is principally engaged in the development, production and sales of pump and related products.
- Group H is a private company founded in 2005 and headquartered in Guangdong Province. It is principally engaged in the development, production and sales of pool equipment and related products.
- Group I is a private company founded in 1989 and headquartered in Guangdong Province. It is principally engaged in the development, production and sales of water environment equipment and pool equipment products.
- Group J is a private company founded in 2003 and headquartered in Hebei Province. It is principally engaged in the development, production and sales of pump and related products.

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Entry Barriers of Global Smart Pool Equipment

High capital investment requirement. Entering the global smart pool equipment market demands significant upfront capital. New entrants must invest in advanced manufacturing facilities, precision sensor technology, IoT-enabled control systems, and robust testing infrastructure. These high initial costs cover product development, quality assurance, distribution networks, and brand establishment. Firms without deep financial resources or established production capabilities face difficulty achieving competitive pricing and scale. This barrier is prevalent across smart pool automation, filtration, and monitoring segments due to integrated hardware and software complexity.

Proprietary technology and intellectual property protection. Leading players in the pool equipment sector maintain extensive portfolios of proprietary technologies and patents covering automation controls, water chemistry algorithms, and connected device platforms. Replicating or improving upon these technologies requires substantial dedicated R&D investment and carries risk of patent infringement. Intellectual property protections limit the ability of new entrants to introduce equivalent offerings without licensing agreements or disruptive innovation, raising entry barriers and lengthening time to market.

Regulatory compliance and product certification complexity. Smart pool equipment must meet rigorous safety, performance, and environmental standards across multiple jurisdictions. Mandatory certifications such as CE (Conformance European) marking, and region-specific safety and energy efficiency standards impose technical testing requirements, documentation, and ongoing compliance costs. Managing fragmented regulatory landscapes that vary by region and product type extends development cycles and increases cost burdens for startups or foreign manufacturers lacking local regulatory expertise.

Established distribution networks and brand loyalty. Major incumbents in the pool equipment market benefit from entrenched distribution relationships with specialty distributors, pool service providers, and installer networks. These established channels provide preferred access to customers, faster product adoption, and strong after-sales support. New entrants must negotiate access to these networks or build alternative channels, which requires time and additional marketing investment. Brand loyalty in a safety-critical product category further compounds this challenge, as professional buyers prioritize reliability and service reputation.

GLOBAL INTELLIGENT POOL CLEANING ROBOT MARKET OVERVIEW

Definition and Classification of Global Intelligent Pool Cleaning Robots

Intelligent pool cleaning robots revolutionize pool cleaning by offering autonomous cleaning capabilities, reducing the need for manual labor and optimizing maintenance effort and water hygiene. They can be categorized by cable presence into two main types:

Cordless intelligent pool cleaning robots (無線泳池清潔機器人), a relatively recent innovation, are powered by an internal rechargeable battery, typically supported by a battery management system (“BMS”). As they do not require a power cable during operation, cordless models provide greater flexibility and ease of use, and their cleaning coverage is not constrained by cable length or cable management.

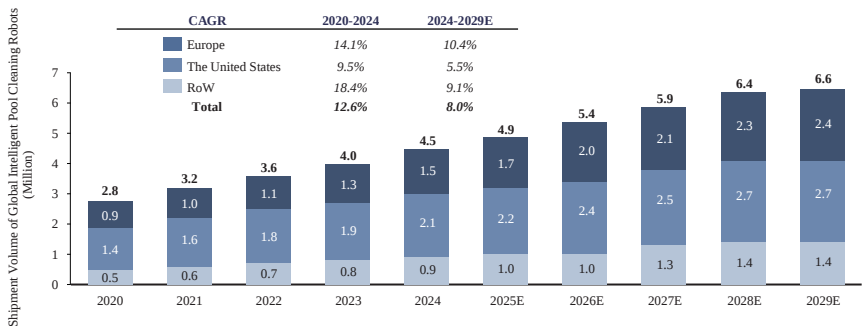
Corded intelligent pool cleaning robots (有線泳池清潔機器人) are powered via an external cable connected to a power supply, typically through a transformer or control unit. They provide stable power output and are generally suited for longer operating cycles and higher-intensity cleaning. However, usability may be affected by cable handling and the effective cleaning range may be constrained by cable length and pool layout.

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Market Size of Global Intelligent Pool Cleaning Robot Market

The shipment volume of intelligent pool cleaning robots globally surged from 2.8 million units in 2020 to 4.5 million units in 2024, indicating a CAGR of 12.6% between 2020 and 2024. It is expected to further increase to 6.6 million units in 2029 with a CAGR of 8.0% between 2024 and 2029. The United States and Europe dominate the market, accounting for around 46.3% and 33.0%, respectively, of total shipments in 2024. The global shipment volume of cordless intelligent pool cleaning robots reached 2 million units in 2024, accounting for 44.5% of the market share, with shipments projected to grow to 4.4 million units by 2029, representing a CAGR of 17.1% from 2024 to 2029. This growth is driven by the greater convenience, enhanced mobility, and increased efficiency, as cordless models offer more flexibility, eliminate the need for power cords, and allow for more effective and versatile cleaning.

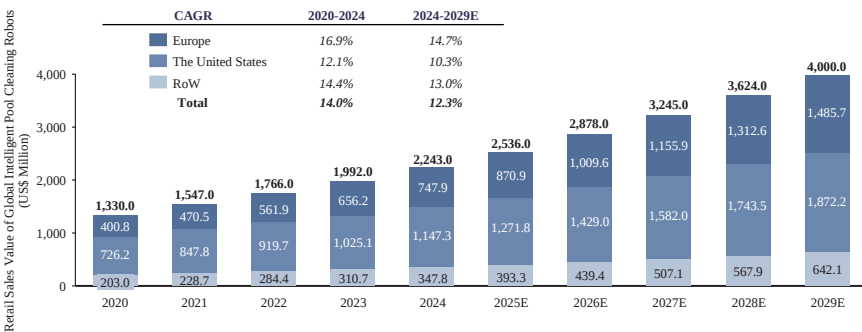
Shipment Volume of Global Intelligent Pool Cleaning Robots by Country and Region, 2020-2029E



Source: Frost & Sullivan

The global intelligent pool cleaning robot market has outpaced the broader pool cleaning sector, driven by enhanced product reliability and advancing technological capabilities. This has led to a higher penetration rate of intelligent pool cleaning robots and an increase in prices, particularly in the lower to middle-class product segments. The market size of the global intelligent pool cleaning robot market, in terms of retail value, increased from US\$1,330.0 million in 2020 to US\$2,243.0 million in 2024, indicating a CAGR of 14.0% between 2020 and 2024. It is expected to further increase to US\$4,000.0 million in 2029 with a CAGR of 12.3% between 2024 and 2029.

Retail Sales Value of Global Intelligent Pool Cleaning Robots by Country and Region, 2020-2029E



Source: Frost & Sullivan

Beyond intelligent pool cleaning robots, the global intelligent lawn mowing robot market is also growing rapidly. It expanded from approximately US\$0.9 billion in 2020 to US\$1.7 billion in 2024 and is expected to reach US\$9.4 billion by 2029, representing a CAGR of 17.2% over the period from 2020 to 2024. The continued penetration of intelligent and autonomous systems in residential outdoor spaces is expected to further support market expansion in the coming years, implying a CAGR of 40.8% from 2024 to 2029.

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Market Drivers of Global Intelligent Pool Cleaning Robot Market

Apart from the market drivers similar to those of the global smart pool equipment market, the global intelligent pool cleaning robot market has two specific market drivers as follows:

Technological breakthroughs accelerating cordless autonomy. Continuous innovation in core navigation technologies, including AI algorithms, computer vision, sensor fusion, and navigation, and obstacle avoidance is rapidly advancing the intelligence and autonomy of intelligent pool cleaning robots. As key components become more standardized and cost-effective, manufacturers are able to enhance performance and intelligent functions while improving overall cost competitiveness. This breakthrough supports greater product differentiation, scalability, and adoption across both residential and professional segments.

Rising demand driven by aging and automation economics. Demographic shifts such as population aging, together with persistent labor shortages and rising labor costs in many markets, are improving the relative economics of automation and accelerating adoption of robotic solutions. Intelligent pool cleaning robots are valued for hands-free cleaning, improved hygiene, and the ability to maintain water clarity with less time and labor. Demand is further driven by expectations for seamless connectivity with mobile apps, scheduling, and remote monitoring, aligning with broader trends toward lifestyle enhancement and sustainable living.

Future Trends of Global Intelligent Pool Cleaning Robot Market

Apart from the future trends similar to those of the global smart pool equipment market, the global intelligent pool cleaning robot market has two specific future trends as follows:

Advancing perception-driven autonomy. Future development of intelligent pool cleaning robots will center on the integration of advanced perception technologies to enable high precision mapping of pool geometry, obstacle avoidance, and adaptive multi zone cleaning. Paired with on-board AI and edge computing, they enable real-time decision-making, higher energy efficiency, and better adaptability, becoming key advantages for next-generation cordless and smart models.

Cordless and user-centric cleaning solutions. Advances in battery technology and power management systems are enabling robotic cleaners to operate without external power cables while maintaining stable cleaning performance and sufficient operating time. Cordless designs simplify deployment, improve safety and reduce operational constraints compared with traditional corded models. With app control, smart scheduling and simple maintenance, such user-friendly cordless products will be a major market trend.

COMPETITIVE LANDSCAPE OF GLOBAL INTELLIGENT POOL CLEANING ROBOT MARKET

Ranking and Market Share of Global Intelligent Pool Cleaning Robots Manufacturers

The global intelligent pool cleaning robot market was highly concentrated in 2024, with the top five manufacturers accounting for approximately 80% in terms of shipment volume of products. The Group was one of the major players, with a global market share of 0.6% in terms of shipment volume of intelligent pool cleaning robots.

The global cordless intelligent pool cleaning robot market was highly concentrated in 2024, with the top five manufacturers collectively capturing nearly half of shipment volume of products. The Group was one of the major players, with a global market share of 1.4% in terms of shipment volume of cordless intelligent pool cleaning robots in 2024.

All of the Group’s products are cordless intelligent pool cleaning robots, and the Group is one of the major players in the global intelligent pool cleaning robot market.