

World *Robotics* Service Robots

2025

incl. Mobile and Medical Robots



Statistics, Market Analysis and Case Studies



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World Robotics 2025 – Service Robots

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We express our most sincere gratitude to all partners!

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Foreword

By: Dr. Werner Kraus, Head of the
Research Division “Automation and
Robotics”



Dr. Birgit Graf and Kevin Bregler,
Research Division “Automation and Robotics”

Dear Reader,

Service robotics is an industry on the move. In the past, the market primarily focused on specialized robot systems that performed a single task really well at a low cost. Today, massive investments in multipurpose robots, mostly in the form of humanoid robots and with enhanced AI capabilities, can be observed. Whether these robots will become a game changer remains to be seen, but so far sales have been very limited. Nevertheless, they will form a technological foundation, and other robots will benefit from the rapid advancements in AI, perception, and manipulation, which are also being developed for humanoids. Further, initial practical trials are already underway.

Autonomous mobile robots have been a growth market for many years, with more than 300 manufacturers worldwide. Further interesting markets are delivery robots in restaurants, field robots, mobile assistants in lab automation, and search and rescue or inspection robots. However, some of these systems are yet to reach scale, and some consolidation effects can already be observed.

Many details about the market and technologies are described in this book. The 2025 edition of “World Robotics Service Robots” presents figures and market data from the previous year. As was the case in previous years, large growth markets contrast small, highly specialized niche markets, with many start-up joining the fray, while other companies struggle to gain a foothold in the market.

We have once again included six interviews with robot manufacturers from around the world. This year, we focused on the applications AP 51 “Logistics robots for indoor environments without public traffic” and AP 64 “Laboratory robots”. The interviews give valuable insights into company strategies, market opportunities, and hurdles that need to be overcome to widen the usage of service robots in the mentioned applications.

Some findings from the interviews were the following:

Laboratory robots

- *Need for automation:* The development of robots for lab automation is driven by the urgent need for efficient solutions to support medical personnel and the

increasing demand for automated procedures. This is particularly relevant during times of workforce shortages and heightened workloads.

- *Importance of collaboration and expertise:* Integrating knowledge from various fields is crucial for the successful development of automation solutions in new domains. Interdisciplinary collaborations can lead to innovative approaches for automating complex processes, thereby enhancing the efficiency and accuracy of outcomes.
- *Shift in business model:* The transition to a service-oriented business model, focused on the results of automated processes, indicates a new strategic direction. This shift delivers added value to customers, while enhancing the flexibility and adaptability of automation solutions.

Mobile intralogistics robots

- *Strategic focus on automation growth:* The development of robots for intralogistics has been driven by the increasing demand for low-cost automation solutions, leading to significant production growth and highlighting the rapid expansion of the mobile robotics market.
- *Integration and customer-centric development:* Successful integration of robotic solutions requires a comprehensive understanding of customer needs, effective project planning, and a focus on co-creation methodologies. Addressing installation challenges, while ensuring high functionality and reliability, is essential for market acceptance.
- *Adapting to evolving market challenges:* As customers face labor shortages, the need for digital transformation, and shorter planning cycles, there is a strong emphasis on enhancing interoperability among automation systems. Companies must prioritize usability and build collaborative networks to support the transition to advanced automated environments.

In close cooperation, Fraunhofer IPA and IFR are monitoring 944 companies worldwide that offer service robotics solutions (roughly 7% of them are start-up). Both the professional and the consumer service robotics domain benefit from technical innovations like digitization, cloud technologies, 5G/6G, and artificial intelligence, specifically in the field of machine learning, which lead to technological advancements in service robotics. For the mentioned AI technology, there is an array of generative AI tools available on the market. Generative pre-trained transformers using large language models, e.g. ChatGPT, will turn service robotics inside out, for example in terms of intuitive operation or support for creating program code. Recently, vision-language-action models like “ $\pi 0$ ” have also been gaining attention: they offer large training data sets that can also be expanded through learning effects of robots from teleoperated processes, if needed. It is evident that generative AI has become an integral part of everyday working life – especially for software development, as software code is highly formalized and widely available on the web serving as training data.

“World Robotics Service Robots” has established itself as the widely acknowledged reference publication in statistics, forecasts, market analysis, and profitability of robot investments. Robot suppliers, media, government bodies, financial analysts, and technology scouts are among its readers. It specifically provides profiles of numerous service robot manufacturers worldwide. The many hyperlinks pointing to online resources encourage readers to further investigate topics of interest by looking into selected publications and company websites. We are indebted to our (current and former) colleagues for their valuable editorial work on the yearbook: Winfried Baum, Simon Baumgarten, Nikhil Srinath Betgov, Dr. Florenz Graf, Dr. Theo Jacobs, Florian Jordan, Max Kirchhoff, Dominik Moss, Cagatay Odabasi, Tobias Rainer Schaeffe, Ph.D., and Miriam Schmelzer. Furthermore, we highly appreciate the support of Dr. Anne Jurkat from IFR and Dr. Karin Roehricht from Fraunhofer IPA in preparing the report. Should you have any suggestions or further inquiries related to service robotics, please do not hesitate to contact us!

Best regards,

Dr. Werner Kraus, Dr. Birgit Graf, Kevin Bregler