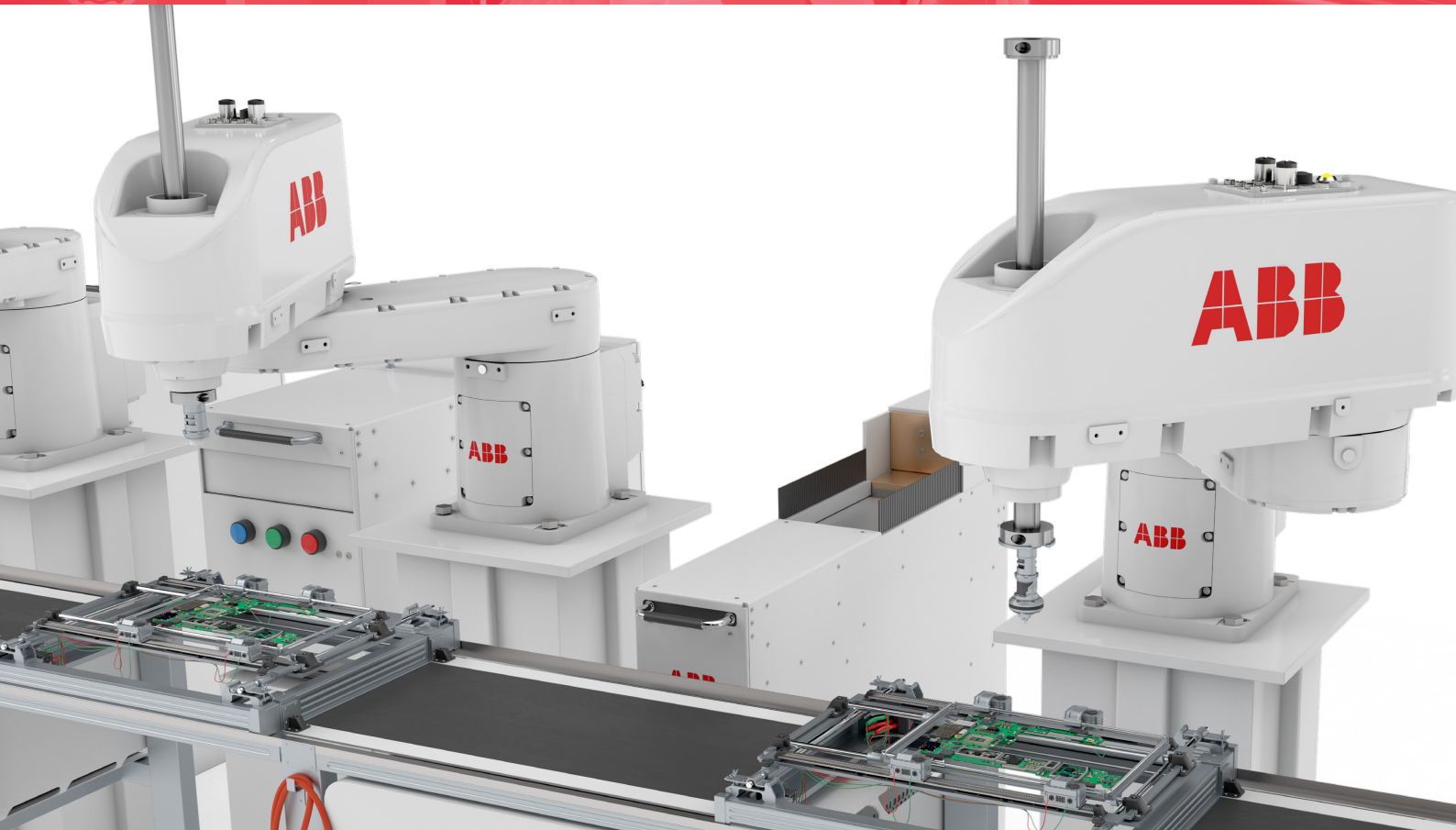


# World *Robotics*

Industrial Robots

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2023



Statistics, Market Analysis, Forecasts and Case Studies

# World Robotics

## Industrial Robots

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### World Robotics 2023 – Industrial Robots

Produced by VDMA Services GmbH, Lyoner Str. 18, 60528 Frankfurt, Germany.

The robot statistics are based on consolidated world data reported by robot suppliers as well as on the statistics and support of the national robotics associations of North America (A3), Spain (AER), People's Republic of China (CRIA), Denmark (DIRA), Poland (FAIRP), Japan (JARA), Republic of Korea (KAR), Italy (SIRI), Sweden (SWIRA), and Chinese Taipei (TAIROA)

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We express our most sincere gratitude to all partners!

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## Foreword

By: Marcus Mead, Chair IFR Industrial Robot Suppliers Committee



Dear Reader,

Dear Robotics Community,

As Chair of the IFR Robot Supplier Committee, it's my privilege once again to introduce the annual World Robotics Report for Industrial Robots.

As has already been widely reported during the last year, global economic and geopolitical challenges continued in force during 2022 and resulted in many unwelcomed operational constraints to industry and business. Issues of significance predominantly occurring as an outcome of the sustained Russia-Ukraine war were excessively high energy costs, high inflation levels and continued supply chain tension maintaining lead times at abnormally high levels and increased pressure on operational cash flows.

Despite these significant challenges, there have been very positive outcomes for industrial robotics as reported in the 2022 annual statistics. As a fundamental automation technology, industrial robotics again demonstrated its ability to perform extremely well against expectations and continue upon a strong path of growth.

As stated in the annual report, year-on-year unit sales compounded annual growth rate of 7% was recorded across the period from 2017 to 2022. This achievement, when consideration is made to the magnitude and impact of the unprecedented crises that occurred during this period including the Covid-19 pandemic and global chip shortage, is testimony to the ever-evolving capability of industrial robots to address the continuously expanding operational requirements of industries and business to enable security of supply, positive progress in improving production efficiencies and increased competitiveness within the markets.

To further highlight the key statistics for 2022; annual robot unit sales volume grew to an impressive 553,052, 5% higher than in 2021; a longer reference period of ten years offers the more significant benchmark of almost 400,000 annual installation unit growth since 2012. Stock of operational robots increased to 3,903,633 units, 12% higher than in 2021 and the associated value of robot installations grew to US\$15.8bn, 4% higher than in 2021.

Finally, the key reference statistic of robot density for the manufacturing industry increased to 151 robots per 10,000 employees globally, this is a notable achievement and continues to signify that robots are being introduced as an automation technology which is not only for traditional repetitive applications, but very much complimentary to and in synergy with conventionally manned processes within flexible production domains.



Major contributors to robot adoption and sustained global growth continue to be the automotive, electronics and metal industries with handling operations and welding being the key application areas. However, solid growth was also observed in both the plastics and chemical industry as well as food and beverage.

From a geographic basis Asia continued to be placed as the leading region with over four hundred thousand units installed in 2022, China continued to track well against its historical performance with 50% of all global installations being reported in the region. Europe still managed solid growth despite headwinds and achieved 84,266 installations, and Germany remained in the top five global regions for robotics, preceded by China, Japan, United States and the Republic of Korea.

As we look forwards to the 3-year upcoming period, the IFR forecasts a sustained 7% CAGR, resulting in a predicted number of robot installations of 718,000 units by 2026. This expectation of growth for industrial robotics demonstrates that rates of adoption of robots will remain very strong and is positive news for the industry as a whole.

The broad array of industry and application related statistics presented in the report offer valuable insights as to how robots are being integrated globally by region, industry, and application, and form an accurate and valuable reference for not only the industry itself, but to users of robotics who wish to assess the industrial landscapes that they participate within or that they may seek to enter in the future.

Understanding this data is key, as it is now widely reported that increasing robot density levels is proven to secure excellent outcomes for a wide range of businesses, from global OEMs to regional SMEs. Moreover, businesses that strongly desire sustainable success and profitable growth are more likely to achieve this with an accelerated approach to implementation of robots rather than one which is overly passive.

Added to this, with the number of robot suppliers and robot types continuing to expand at an astounding rate, the choice now for industry and business has never been better to realize increased automation, the IFR will continue its mission to focus on offering support to all that seek to automate with robots and ensure the technology is increasingly accessible and understood.



Marcus Mead

Chair IFR Industrial Robot Suppliers Committee