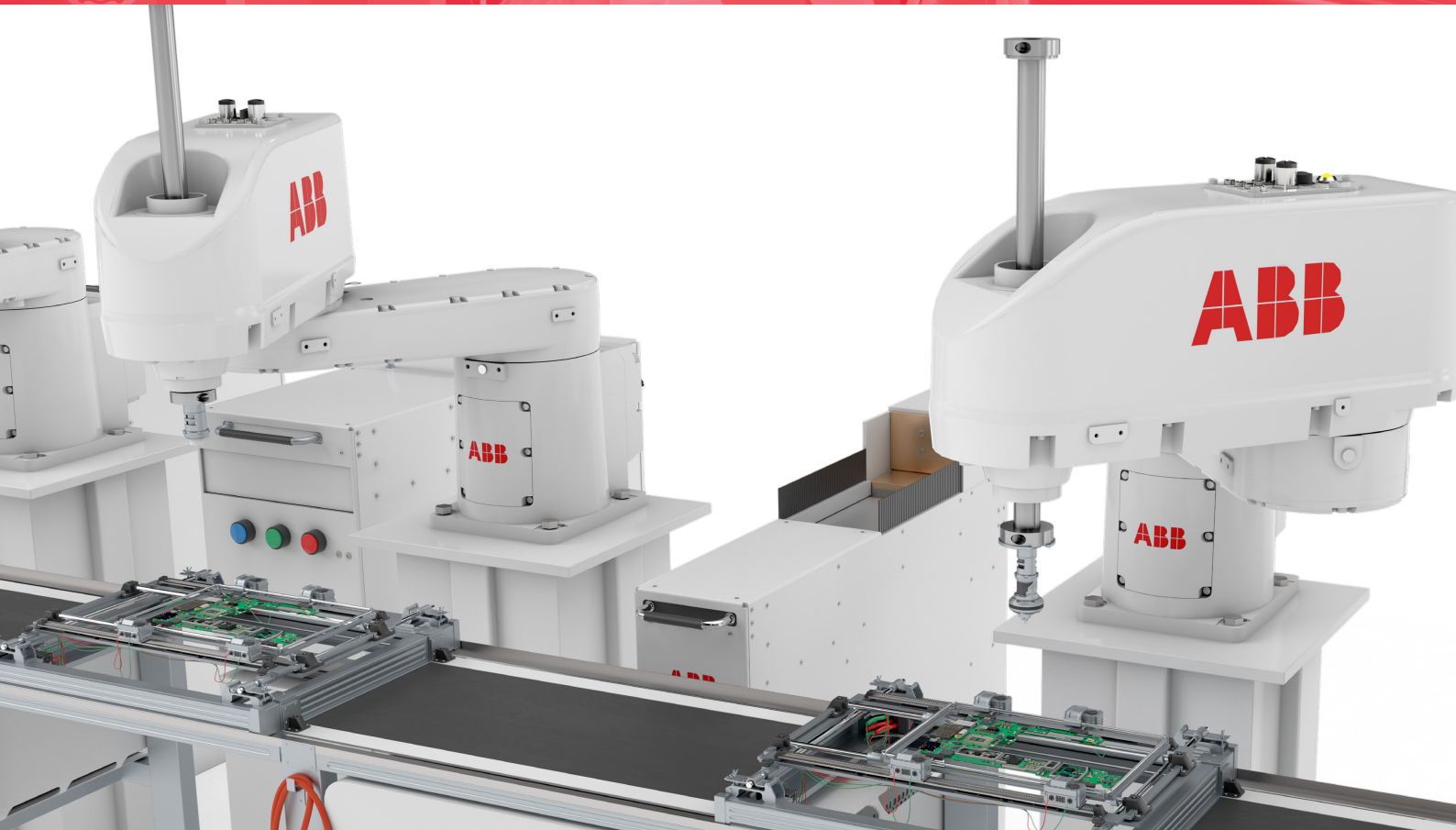


World *Robotics*

Industrial Robots

2023



Statistics, Market Analysis, Forecasts and Case Studies

World Robotics

Industrial Robots

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World Robotics 2023 – Industrial Robots

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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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Editorial

By: Marina Bill, IFR President and Global Vice President and Head of Marketing and Sales Robotics Division, ABB Management Services

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A new way forward – harnessing A.I. in robotics to make work better.

We're in the midst of a decade of unprecedented transformation, driven in part by the global pandemic and geopolitical events which are fundamentally changing the way we manufacture and deliver goods.

That transformation is happening against the backdrop of long-term global megatrends including a shrinking global workforce, increasing appetite for e-commerce and a fundamental need for sustainability and resilience, including in supply chains.

All will continue to feed long-term demand for robotics and automation in manufacturing and logistics and the need to make this automation smarter, faster, more efficient and, importantly, more accessible.

The use of Artificial Intelligence offers a tremendous opportunity for the robotics industry to respond to these customer and societal needs.

AI itself is not new to robotics. Vision and learning intelligence has been built into robots for many years. Robots excel at tasks humans find difficult – strenuous, repetitive, dull, dirty or dangerous. AI can make robots better at fulfilling those tasks: more capable of learning; able to learn by experience, rather than programming; able to work in dynamic environments, or around people. It is rapidly changing what is possible.

What does this mean in practice?

Independent studies have suggested that Japan may face a shortage of more than 11 million workers by 2040, as its population ages rapidly. Similar forecasts in the U.S. suggest more than 2.1 million manufacturing jobs there will be unfilled by 2030. And earlier this year, more than half Germany's companies said they were struggling to fill vacancies due to a lack of skilled workers.

As well as losing key skills, those people available for work are increasingly rejecting intensive manual jobs. For many companies, there is an urgent need to bridge these labor gaps with intelligent robotics and there is a growing number of AI-powered solutions that can do just that.

In manufacturing, vision AI has already created robots that can both weld precisely and learn to spot microscopic defects faster and with more accuracy than any human.

And in warehousing and logistics – a sector whose growth is outstripping labor supply thanks to the explosion of e-commerce and online shopping – AI-enabled robots learn to recognise different objects and know how to pick and pack them at high speed.

Elsewhere, robots today use vision and learning abilities to navigate autonomously without guidance, to transport items efficiently around the factory or warehouse.

AI can even enhance maintenance in the production line. Using AI planning and programming software, designing the most efficient movement path for a robotic arm takes a fraction of the time of an engineer programming the same path manually; turning a 90-minute maintenance task into a two-second adjustment.

More intelligent and efficient robots are also helping us address demands for sustainability, through energy efficiency, waste reduction, and smaller operational footprints; and flexibility, to compete with rapid changes in demand.

For example, precision painting technology in the automotive sector can reduce material waste by up to 60 percent and enhance sustainability by reducing energy and water use.

In food and beverage packaging, intelligent automation enables producers to adapt to recycled packaging and reduce the use of plastics.

This is happening already, and the continued convergence of AI and robotics has huge potential, both for overcoming challenges of today, and opening up new opportunities for tomorrow.

Ease of use and access to automation is more important than ever for more industries, segments and geographies. Generative AI has the potential to be a game changer – making robots even more accessible for small and medium-sized businesses, by making programming and coding faster and easier, lowering barriers even further for robots to be integrated and adapted to different environments.

Imagine being able to just speak to a robot and it performs a new task straight away: the intelligence it needs to do that is in AI.

But to truly take advantage of this technology and harness its possibilities, we need to think and act more as an ecosystem: encouraging start-up and early-stage businesses in new applications for AI, and collaborating, co-inventing and educating between industry, academia, schools, and the whole value chain.

Educating society in where robotics and AI can be beneficial and used without risk, to bridge the growing labor and skills gaps.

Educating today's workforce in new skills, to continue to break the shackles of labor-intensive manual work, and instead manage and share such tasks with intelligent robots.

And educating tomorrow's workforce in the possibilities of AI, to create new opportunities we haven't even thought of yet.

Sensible and proportionate regulation – building guardrails, not walls – is needed to help encourage this new wave of innovation, with AI as its foundation.

In the past 50 years of its development, AI has advanced robots' ability to improve the efficiency of the tasks they already do, to take on new tasks, and to do those tasks in more places.

The new generation of AI is a powerful tool to help us continue this journey, to make work better – for individuals, for businesses and for the environment.