

Automation made easy

# Is automation right for my business, right now?



An Epson robotics guide

**EPSON®**

# Introducing automation

Robotics solutions operate in factories all over the world in many different applications including production, quality control, transportation, recycling, cleaning and maintenance. Automation benefits all types and sizes of business to improve productivity, energy and resource utilisation.

Taking the first step on any automation journey can be a daunting task. This guide is here to walk you through the what, how, where and why and support you in making informed decisions to build the case for automation in your business.

## **Epson's robotics journey – 40 years in the making**

From the mid-1960s Seiko Epson introduced automation in its factories to deliver fast, efficient and high precision assembly to produce its own complex technologies – from watchmaking to printers, because no one at the time was making robots that met its high accuracy requirements.

In 1983, the company began external sales of precision assembly robots. Today, Epson robots are installed in factories throughout the world and many of the top manufacturing companies rely on Epson robots to reduce production costs, improve product quality, increase yields and boost the bottom line. Epson has been the market leader for SCARA (Selective Compliance Assembly Robot Arm) robots since 2010, with a 31% market share<sup>1</sup>.



# Who is automation a good solution for?

Robots are great at performing 4D jobs: tasks that are dull, dirty, dangerous or delicate

Automation benefits businesses of all types and sizes for a wide variety of reasons. Epson's automation systems are extremely customisable and are designed to meet the changing requirements of European businesses. They provide solutions that simplify the know-how needed to install, set up and program and they support complex manufacturing processes.

## There are many reasons you might be looking to automate tasks and processes:

### To meet labour needs:

Free up your existing labour force for other activities and reduce the need to hire in a challenging labour market and increase manufacturing resilience.

### To reduce repetitive tasks:

Replace repetitive motion tasks that can be a cause of injury for your workforce.

### To increase volume of production:

Increase volume output without needing to increase workforce.

### To maintain consistent quality and precision:

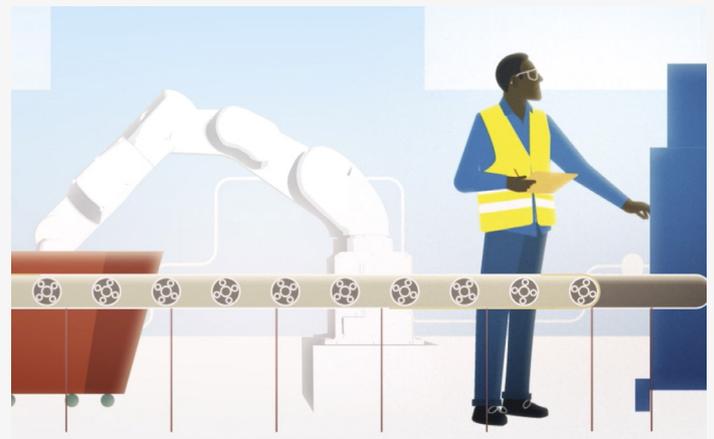
Ensure consistency of output quality even with increasingly small parts or tight precision requirements beyond what human hands can manage.

### To handle challenging materials:

Production with materials that are unsafe for humans to handle.

### To improve resource efficiency:

Meet stricter environmental requirements with machines that reduce material and space waste, energy consumption and transport costs.



## A growing number of industries are seeing the benefits already

Life sciences and lab automation	Industrials and automotive	Electronics and assembly	Packaging, labelling and food
Medical, pharmaceutical and biotech device applications	Automotive parts, mechatronics, batteries, valve assemblies, flooring, smoke detectors	Chip assembly and testing, consumer appliances, computing, microdevices	Pill dispensing, meat packaging, produce inspection, labelling, prescription fulfilment systems
<b>Ask us about:</b> <ul style="list-style-type: none"> <li>– traceable manufacturing</li> <li>– ISO cleanroom and other standards compliance</li> <li>– anti-static robots</li> </ul>	<b>Ask us about:</b> <ul style="list-style-type: none"> <li>– washdown and dustproof models</li> <li>– integrated vision guidance for inspection</li> <li>– force sensing and vision</li> <li>– flexible parts feeding system</li> </ul>	<b>Ask us about:</b> <ul style="list-style-type: none"> <li>– electrostatic discharge (ESD) compliance</li> <li>– electrostatic discharge (ESD) compliance</li> <li>– tight tolerances</li> <li>– 24/7 reliability</li> </ul>	<b>Ask us about:</b> <ul style="list-style-type: none"> <li>– up to 20kg payloads</li> <li>– up to 1000mm reaches</li> <li>– up to 450mm vertical reaches</li> <li>– washdown (IP65) robots for the food industry</li> </ul>

# Designing an automated solution in line with your business priorities

The automation process should be designed to focus on solving your particular pain points. Knowing which areas are most important to your business, what your key drivers for automation are, Epson's experts can help modulate a solution to meet your needs.

**Affordability** – talk to us about your budget, the total cost of the automation process, and the savings automation can mean for your business.

**Speed** – beyond speed think about your cycle time and how many parts you need to produce per week. Robots don't stop for breaks or weekends so 24/7 activity may make speed less important, and tools and optimisation can make a big difference in output.

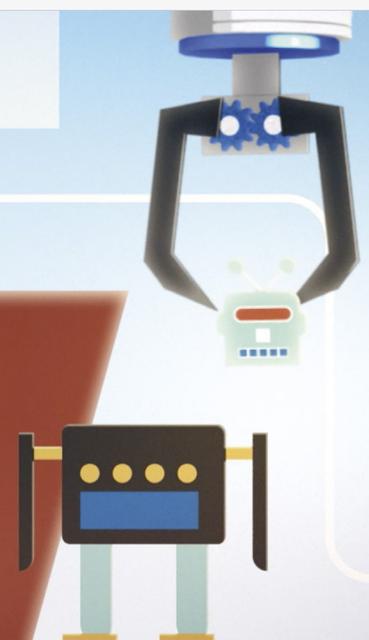
**Accuracy and precision** – Epson robots are capable of repeatability down to 5 microns which is beyond the needs of most applications. Ask about placement tolerances and how they might impact speed to define where to focus your solution design.

**Payload and reach** – simple but incredibly important to know is how heavy your parts are and how fast they need to be moved. Ask about what tools your robot might need to be able to interact with your parts.



Epson is the No.1 SCARA Robot manufacturer in the world<sup>1</sup>, with more than 500 models available

Epson's entry-level SCARA robots and compact 6-axis VT6 models make the entry price for robotics more accessible than ever – as little as €8,000. With an investment equal to half a year's average labour salary your entire project can get off the ground from process design through installation and launch.



# Designing solutions to meet your needs

## Choosing a robot

From entry level to high-level special kinematic robots, Epson has a solution designed to meet your needs. Our robots can generally be separated into two types, based on the number of axes.

### Four-axis robots

Epson's range of SCARA (Selective Compliance Articulated Robot Arm) robots is unmatched and includes the following:

The entry level T series comes equipped with a built-in controller and is designed for installation simplicity and maximum usability. Ideal for automating simple materials handling tasks.

The LS-B series builds on the T series, with improved cycle times, higher payloads, and increased reach, while maintaining the low-cost.

The RS-Series is zero footprint, providing a unique and flexible SCARA option.

The G series lead the industry in variety, features and performance, and is complemented by the GX series to meet even higher-power-density and payload needs. In particular, the GX-B series enhances efficiency and security standards, enabling safe fenceless operations without compromising the speed of operations.

### Six-axis robots

With a wider range of motion, Epson's compact, high-performance 6-Axis robots offer outstanding flexibility and reliability. With a unique Slimline design and reduced footprint, Epson's 6-axis robots can work in tight spaces like never before, mounted on the floor, tabletop or ceiling depending on your environment. Epson's range is ever expanding and includes:

The VT series engineered for maximum usability and a low total cost of ownership (TCO) which comes equipped with a built-in controller. Built to automate simple, repetitive materials handling tasks.

The C series was engineered for precision assembly of small parts.

These robots come equipped with Residual Vibration Control, an Epson technology that enables Epson robots to move at high speeds with minimal vibration with payloads from 4 to 12kg and arm lengths from up to 1400mm.

The N series was designed with specialised kinematics that increases productivity in even smaller work cells with the ability to reach every point within its working area without wasteful extra movements while maintaining the high performance expected of a six-axis robot.

### GX-B robots

If you are looking for a safe robot that allows fenceless applications without compromising speed and efficiency, the GX-B robot could be right for you. GX-B includes enhanced safety functionalities while simplifying machine design, reducing downtime and space, and all of this without the need for a cage.

The Safely Limited Speed (SLS) reduces the speed in set up mode and when a human is in proximity. GX-B robots can work in two modes; co-existing and synchronising — where the robot's working space does not overlap with that of humans or overlaps but at different times.

Virtual walls can be used for machine downsizing and to reduce machine downtime while the Safe Limited Position (SLP) ensures effective protection area monitoring without the need for external components.

## Mythbuster:

### What about cobots?

A collaborative robot, also known as a cobot, is an industrial robot that can safely operate alongside humans in a shared workspace. Human-robot collaboration can allow people and robots to work together and exploit each other's strengths; combining fine motor skills and judgement with consistency and strength. However, when we bring humans and robots into close contact, we also have to consider what we must compromise. The relentless speed, accuracy and independence of the autonomous robot is relinquished in a cobot set-up. Cobots still require programming and safety measures. While ergonomic workplaces of the future will benefit from cobots, industrial robots will remain leaders in speed and efficiency.

## Beyond the robot

### Your accessories

A robot alone can't do the job immediately. Consider that: your parts not only need to get to the robot, but they may also need to be fixed in place during the assembly of your product. Your robot may need vision to improve precision of its actions or inspect the product or component, and it most likely needs end-of-arm tooling to grasp and work with your parts.

### Your cell

A robot cell or workcell is a complete system that includes the robot, the controller, and any peripherals you need such as a parts-positioner or safety environment. Safety environments are key to ensuring that your individual robots can work at speed and interact with each other during job processing while ensuring safe and healthy working conditions for the humans around them.

## Installation and programming

### Programming and set-up

To control how a robot interacts with its environment and achieves your desired goal, it requires programming. In many cases, this can require at least a basic knowledge of mathematics and a programming language, but this can vary depending on the complexity of the task.

### For more simple applications, look no further than RC+ Express

Epson's proprietary, no-code, easy-to-use robot teaching application. An intuitive software development program for Epson SCARA and 6-axis robots, Epson RC+ Express features an easy-to-learn, block-style robot teaching environment to get users up and running fast. Start creating simple applications quickly — like pick-and-place, palletising and depalletising — using convenient, premade templates. Ideal for new users, it can be implemented with the support of systems integrators or Epson can provide training for those with little to no coding experience to get started.

### For more complex applications

A skilled engineer such as a Controls Engineer, Electrical Engineer, Mechanical Engineer, Software Engineer, or people well versed in these disciplines may be required to get a full automation process up and running, but having these skills in-house isn't a necessity with partners available to support your business.



## Mythbuster:

### Retraining vs reprogramming

Your robot can do more than the task you first set it up for. In fact, you can easily adapt automation equipment to fit new products or solutions. There is a difference between reprogramming and retraining — and the level of experience needed depends on the task. Similar tasks but slightly different parts? Retrain your robot! Same parts but entirely new task for the robot to execute? Then reprogram, with the help of experts for complex new tasks.

## Mythbuster:

### Lack of experience is a barrier to entry

Not sure you have the skills or know-how in-house to make the best choices for your business at this stage? We can help. From project management to implementation our highly trained experts are here to help.

We can even help you with feasibility studies instead of theoretical simulations by creating cycle-time tests with actual physical robots. These studies offer multiple benefits: you receive the optimal robot configuration, the best possible installation site and accurate cycle times before your investment. This provides you with optimum planning and project security.

### Going it alone vs. working with a systems integrator

If you don't have the necessary resources in-house, contact a Systems Integrator (SI). Systems Integrators specialise in designing customised robot workcells that build all types of products for the automotive, electronics, medical, consumer product and other industries. They have the necessary experience with best-in class solutions and component usage to build your automation system. Essentially a one-stop shop, SIs work with manufacturers to pull together every component of your system.

Speak to one of our sales consultants to find the best partner for you.

Telephone: **+49 (0) 2159 538 1900**

### Safety and maintenance

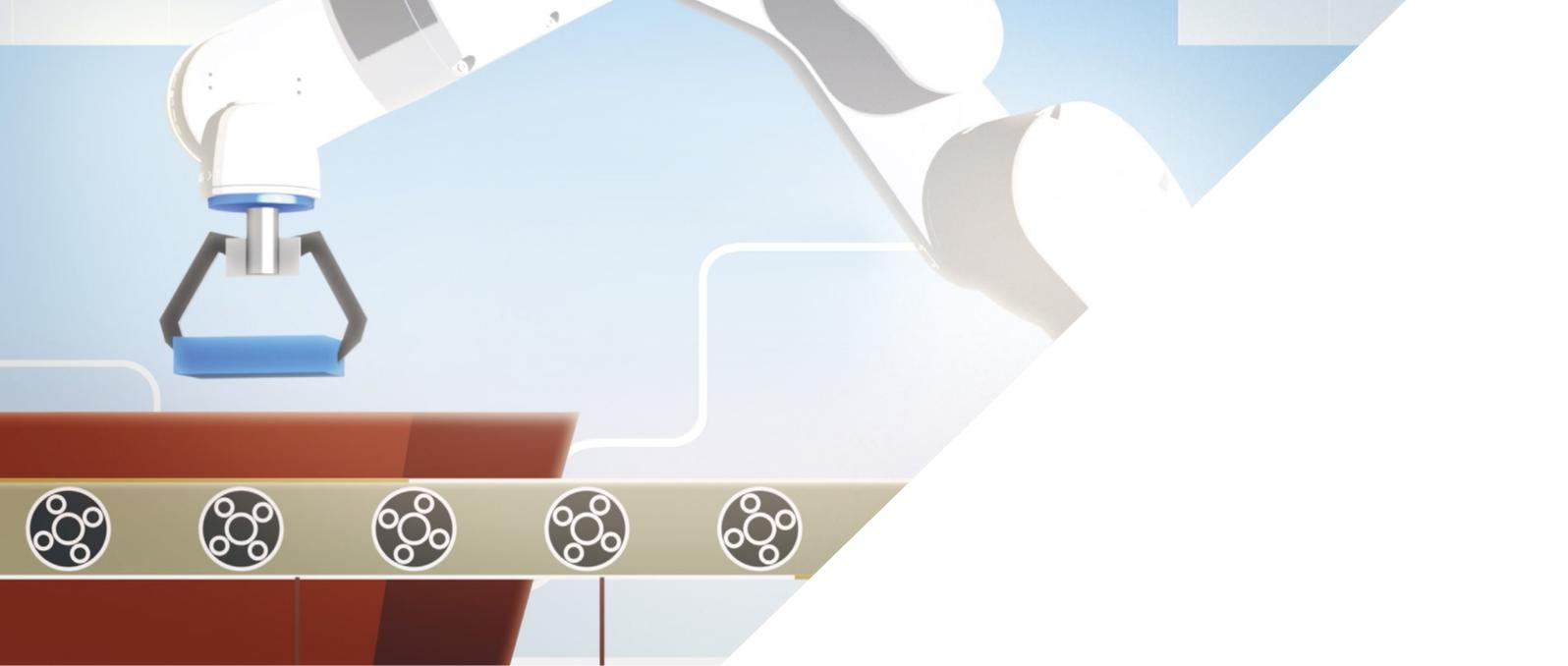
#### Safe installation

While Epson produces robots and programming tools that are increasingly accessible, easier to program, and designed to perform with minimal oversight, robots themselves are not universal or necessarily easy. Risk assessments and safety features, while not costly, are a legal requirement. Engaging experts at the right time for your needs is essential in order to create a safe and productive automated business and can save you time and money in the process by getting involved early on.

#### Maintenance needs

Robot maintenance is low but doing it properly will ensure that your robot and workcell have a long lifetime of use ahead. This process can be organised by your systems integrator or distributor or can be managed in house – and Epson can provide the necessary training for your team.





# What about reliability?

## Epson is never far away

Our robots pallet, saw, mill, drill, grind, assemble, move and build together. They work precisely and at a breath-taking speed in all these and many other applications – often for up to 24 hours a day – and we are here to help make sure they don't need to stop for long.

## Spare parts

Keeping your own spare parts handy can result in high storage costs. We provide you with a spare parts management system, which gives you access to all the assemblies and components that you need. All spare parts are delivered within short lead times from our European central warehouse.

## Preventive maintenance

Whether on a standard or tailored service contract, with preventive maintenance you increase the life of your system while reducing the risk of downtime to a minimum. We're happy to assist you with the creation of an effective maintenance plan.

## Repair service

Our robot systems are well-known for their excellent reliability. If damage is caused due to an accident or if critical parts must be exchanged after thousands of operating hours, our engineers will support you by phone or on site.

1 Market share based on unit sales of industrial SCARA robots, 2011-2020 (Source: Fuji Keizai "2012 – 2021 Reality and Future Outlook of Worldwide Robot Market").

For further information please contact your local Epson office or visit [www.epson.eu/contact-us](http://www.epson.eu/contact-us)

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