

EPSON



Epson Manufacturing Industry Solutions



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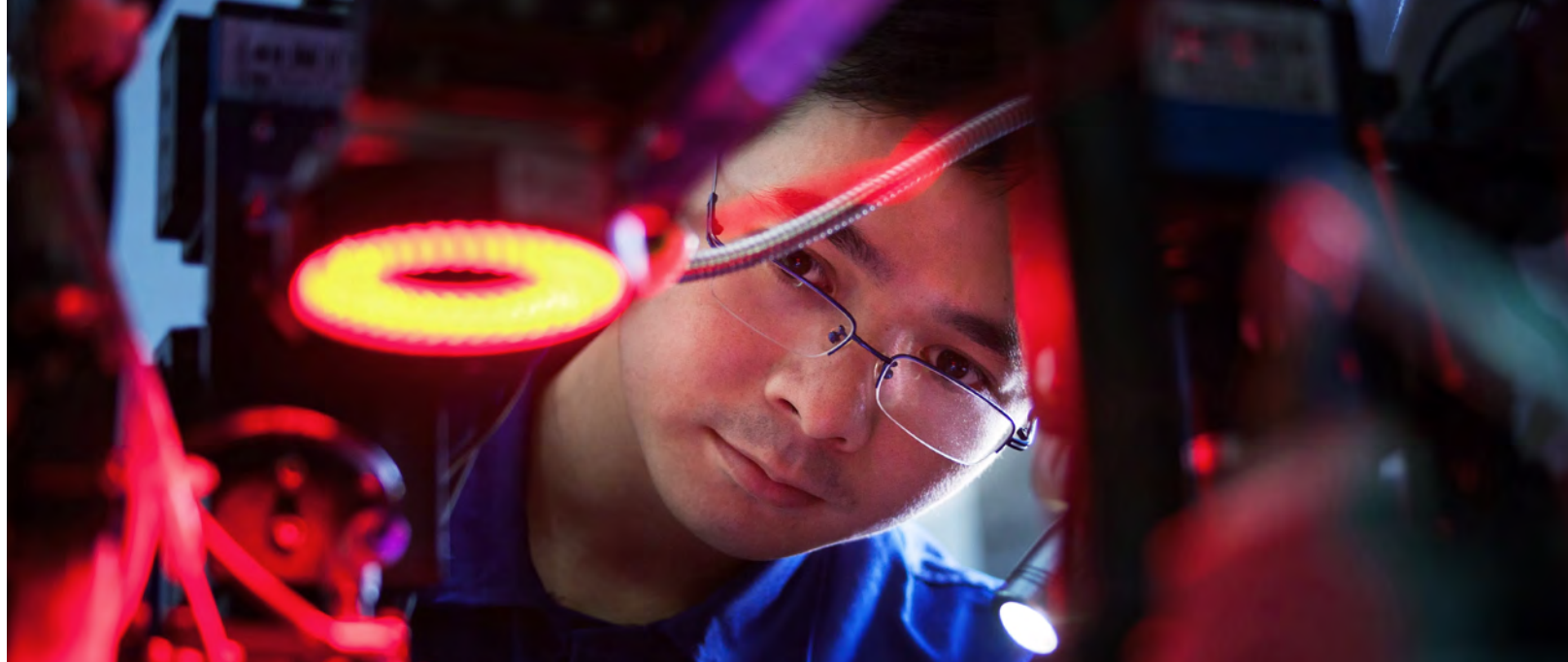
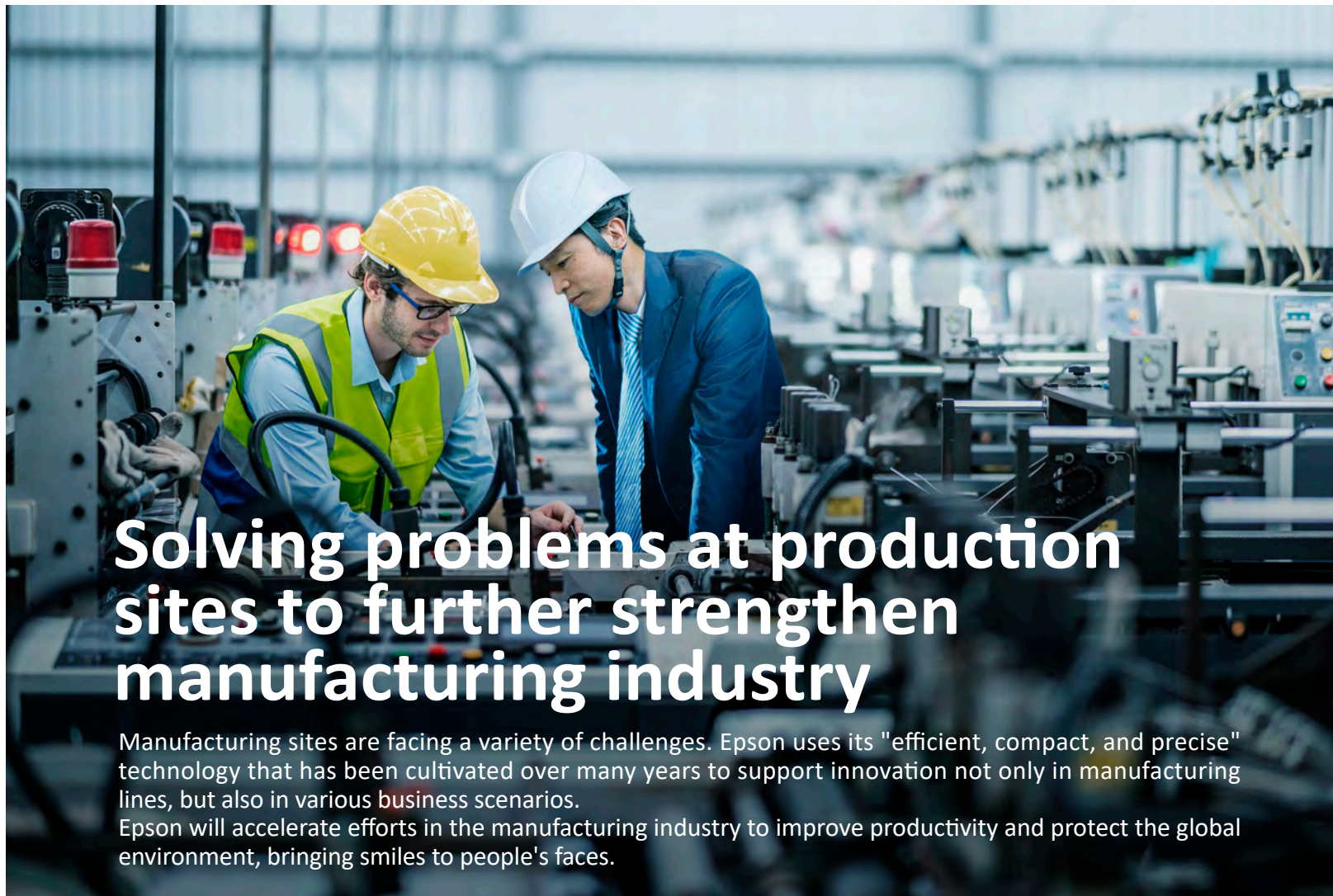
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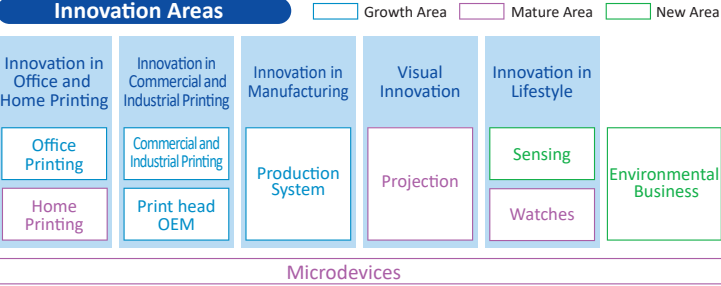


Scan the QR code
for more information



Enriching people and the Earth with value created by "efficient, compact, and precise" technology

Epson has established "Epson 25 Renewed" to "achieve a sustainable and enriched society" based on our pursuit of enriching people and the Earth with value created by "efficient, compact, and precise" technology. In response to the growing demand for solutions to environmental concerns and other social issues and for "connections" and "information" in a "decentralized" society, we are working to realize our vision by providing society with solutions that smartly connect people, products, and information in a wide range of areas, from our private lives to industrial and manufacturing sites. The key elements of this vision are "environment," "DX," and "co-creation." Epson places particular emphasis on contributing to the "environment." In addition, we are utilizing digital technology and collaborating with a number of partners to solve social issue.

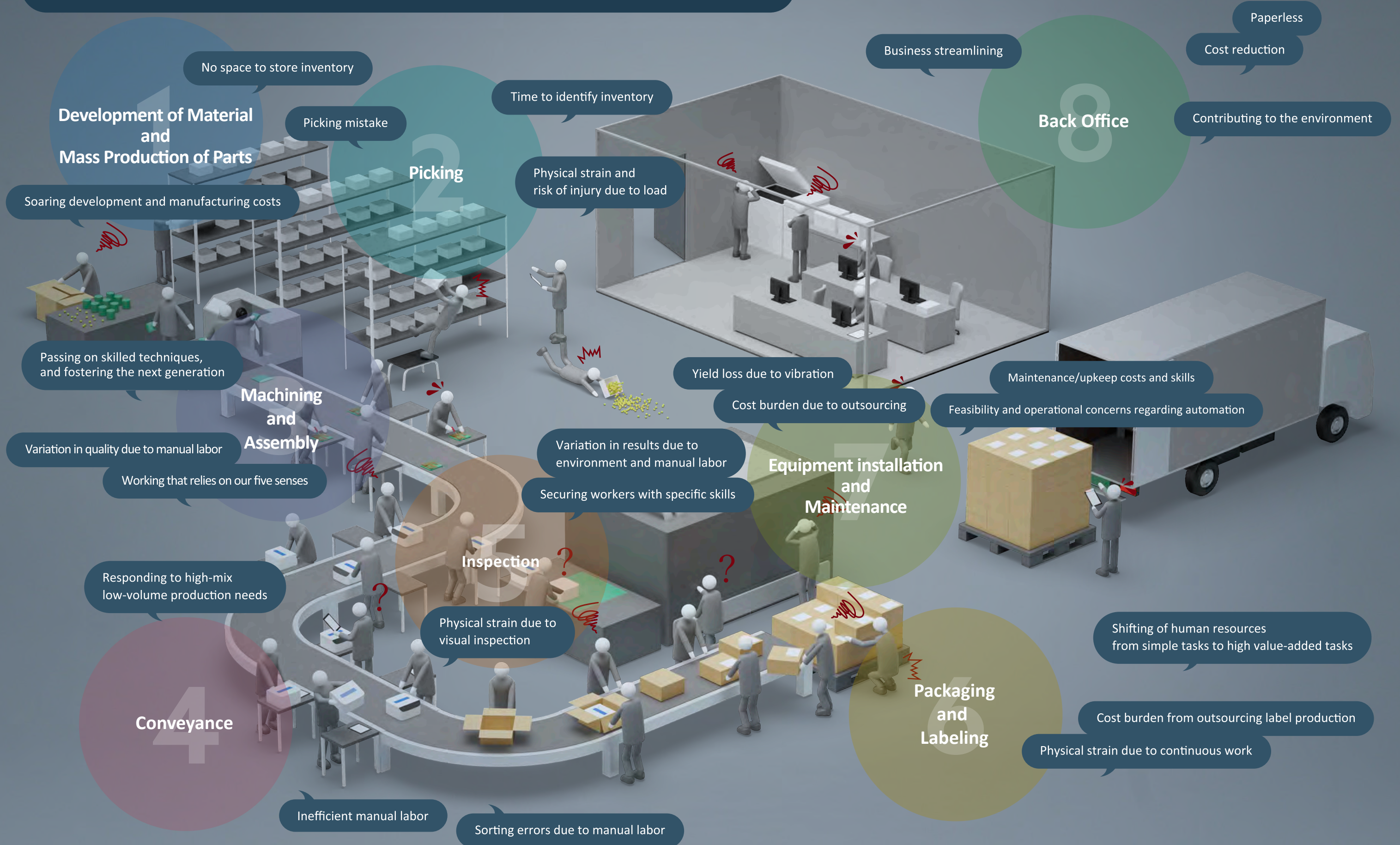


Cooperating in the creation of "flexible high-throughput production systems" with consideration for environmental impact, to achieve innovation in manufacturing

Production sites are faced with the challenges of reducing labor shortages and strengthening resilience to cope with rapid changes in the environment. In addition, in response to environmental concerns that are becoming more serious worldwide, the challenge of manufacturing products with a low environmental impact is accelerating at production sites. Today, customers who are automating their factories expect not just the introduction of robots, but a "transformation of the production site." In order to meet these expectations, Epson has expanded its

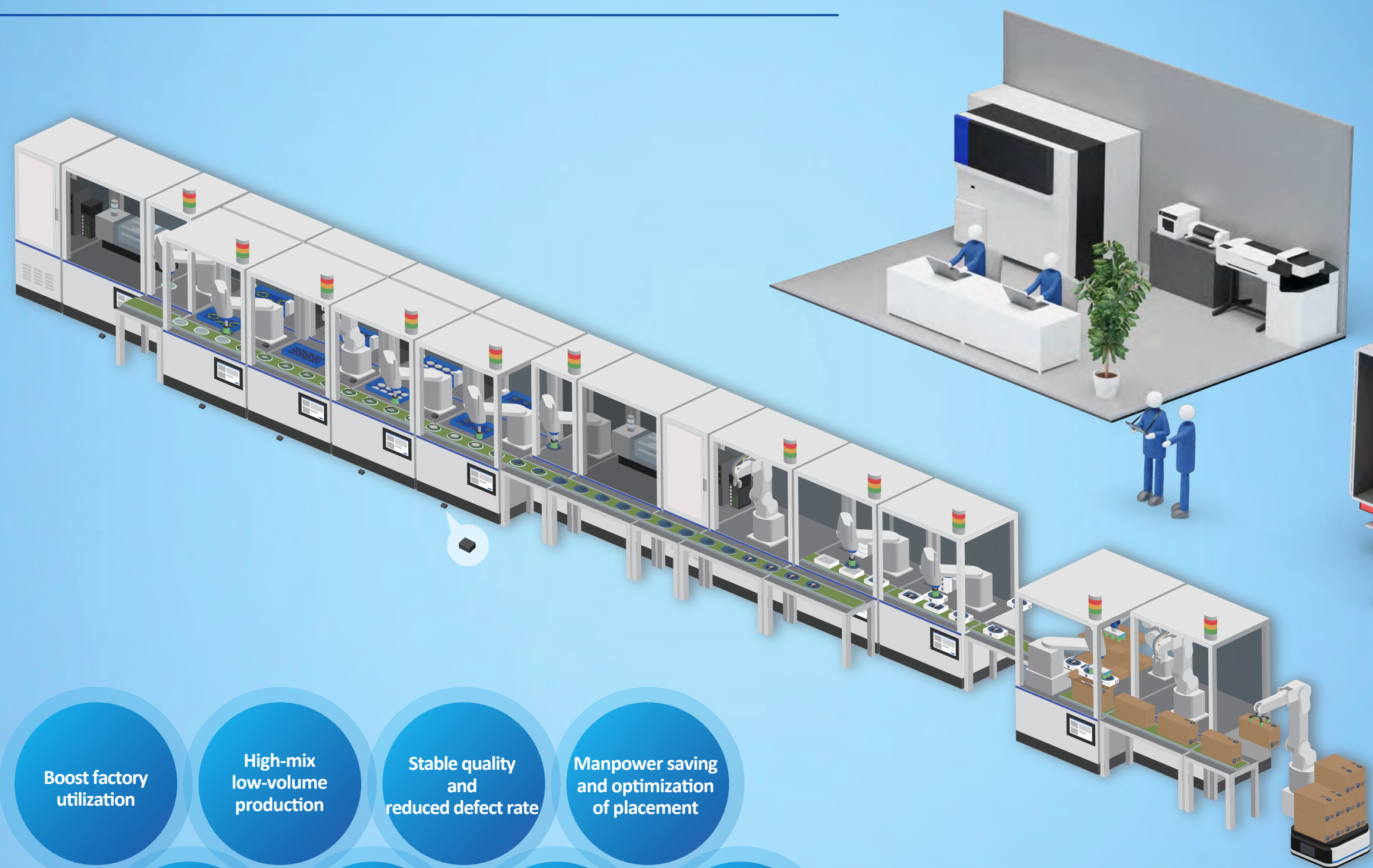
domain to include the "production of parts" and "support for conceptual design and implementation" for production systems, in addition to using robots for "assembly and inspection." In the "molding machine," "robot," and "engineering" markets, Epson will develop its business by targeting "compact" areas where it can better demonstrate its strengths, such as its "efficient, compact, and precise" technologies. Epson is evolving from its past approach of selling one-size-fits-all robots to providing solutions based on customers' "expectations."

Do you have any of these problems at your manufacturing site?



Epson incorporates a variety of solutions

to support automation at manufacturing sites



Boost factory utilization

High-mix low-volume production

Stable quality and reduced defect rate

Manpower saving and optimization of placement

Technical transfer

Design development efficiency

Environmental consideration

Effective use of space

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1 Development of Material and Mass Production of Parts

Problem

Various price hikes in raw materials, utilities, etc. Evolution of materials and higher requirements for molded parts due to increased environmental awareness Support for small-quantity, high-mix production due to diversifying needs Changes in manufacturing sites due to supply chain fragmentation

Solution

Unique disk drive system to allow both smaller equipment and higher energy efficiency

Unique hot runner system to minimize runner waste

Unit mold system for speedy setup changes

Effects of introduction

Efficient plasticization shortens manufacturing time and reduces waste materials

The short plasticization path reduces thermal damage to materials

High-mix, low-volume production and efficient setup changes improve manufacturing efficiency

Small installation and mold storage areas, effective use of limited space

2 Picking

Problem

Picking mistakes, recording errors, etc. Risk of injury when unpacking cardboard boxes, physical strain due to load Insufficient human resources for simple tasks such as unloading shelves and removing items from processing machines

Solution

Robot automation for unpacking cardboard boxes

Picking inventory locations displayed on smart glasses

Attach color labels with images of parts to stock cases

Automation by robot from removal to arrangement and attaching slips

Effects of introduction

Reduction of risk of injury and physical strain

Avoid rework due to picking errors and misidentification

On-demand printing of labels and slips to prevent waste and reduce costs

Effective use of limited space

Unpacking cardboard boxes

Automated unpacking of cardboard boxes

Boost Factory Utilization

Stable Quality

Manpower Saving

Space Saving



SCARA robot with built-in controller

Cardboard box unpacking equipment

*This machine itself is not available outside of Japan.

Order picking for individual boxes

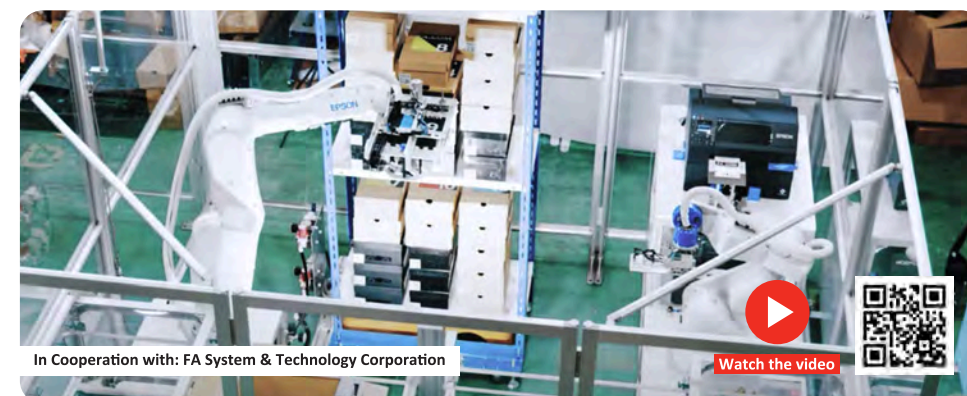
Automated identification and picking of individual boxes

Boost Factory Utilization

Stable Quality

Manpower Saving

Space Saving



In Cooperation with: FA System & Technology Corporation

Watch the video



Folding 6-axis robot

6-axis robot with built-in controller

Color label printer

The power to master small scales

Micro injection molding machine that combines economic and environmental performance

Flexible Production

Space Saving

Environmental Consideration

Manpower Saving

Boost Factory Utilization



Micro injection molding machine
Clamping force: 3 tons/10 tons



Micro injection molding machine
Vertical type
Clamping force: 3 tons



3 Machining and Assembly

Problem

Precise work that relies on human's senses (tightening screws, fitting parts, insertion work, etc.)

Passing on works that require skilled techniques (fostering the next generation)

Variation in quality due to manual labor

Solution

Automation of difficult tasks that had previously been abandoned is now possible through the use of robots and sensing devices

Automation of flat and 3D object coating operations with robots and inkjet printheads

Effects of introduction

The shift to automation improves production efficiency and work quality

Solves the issue of passing on skills

Realization of stable operation by eliminating "variation"

Free from the effects of solvents and other substances on health when applying coatings, and protecting the environment

Insertion of FFC/FPC/coaxial cable connectors

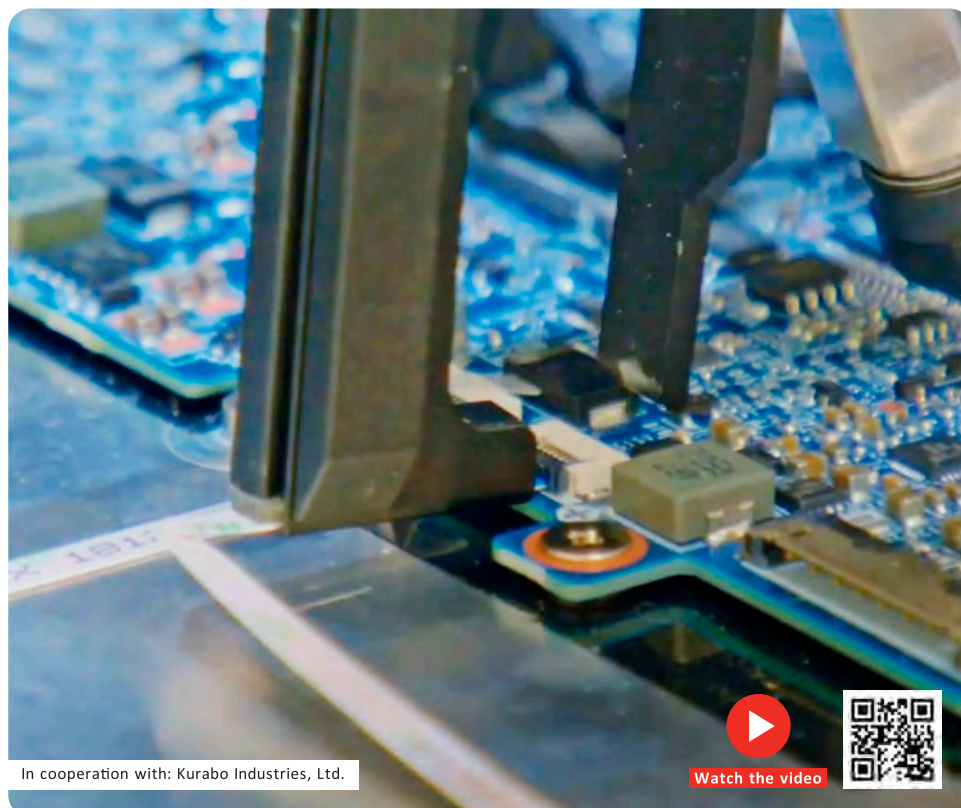
Automation of difficult tasks that require human's senses and skilled techniques

Boost Factory Utilization

Stable Quality

Manpower Saving

Technical Transfer



In cooperation with: Kurabo Industries, Ltd.

Watch the video



6-axis robot



Force sensor



Image processing system



High-speed 3D vision
(manufactured by Kurabo Industries, Ltd.)

Assembly of printer dot heads

Automation of long, continuous, precise work

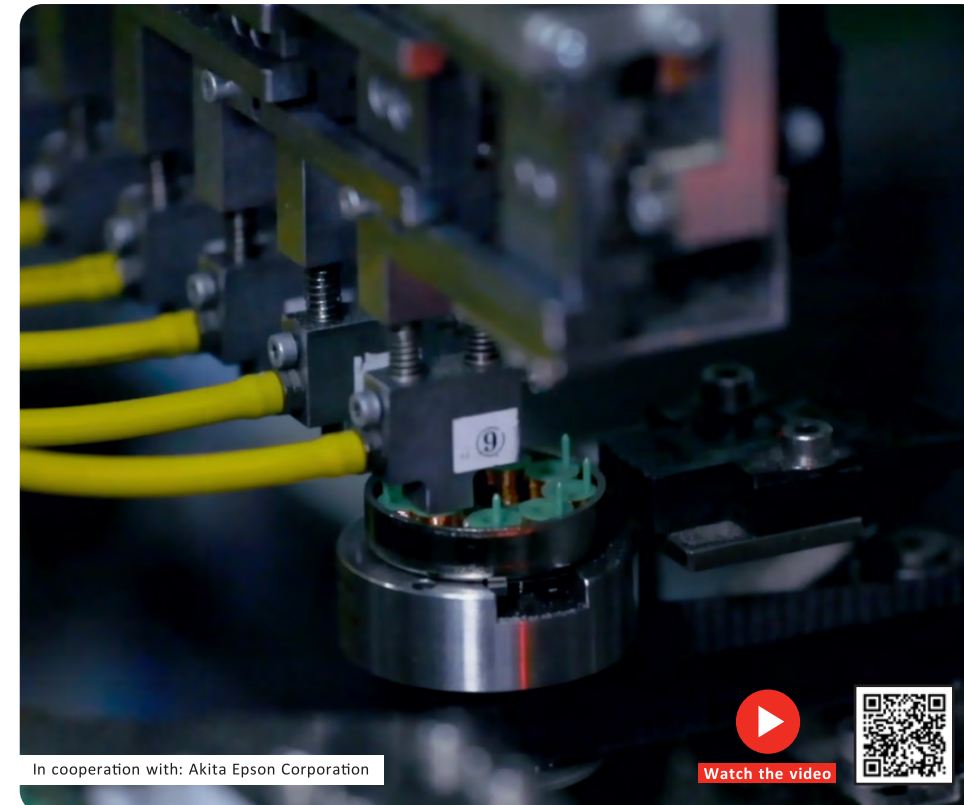
Flexible Production

Boost Factory Utilization

Technical Transfer

Manpower Saving

Stable Quality



In cooperation with: Akita Epson Corporation

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Compact SCARA robots



Parts feeding system

Feed materials and assembly of medical kits

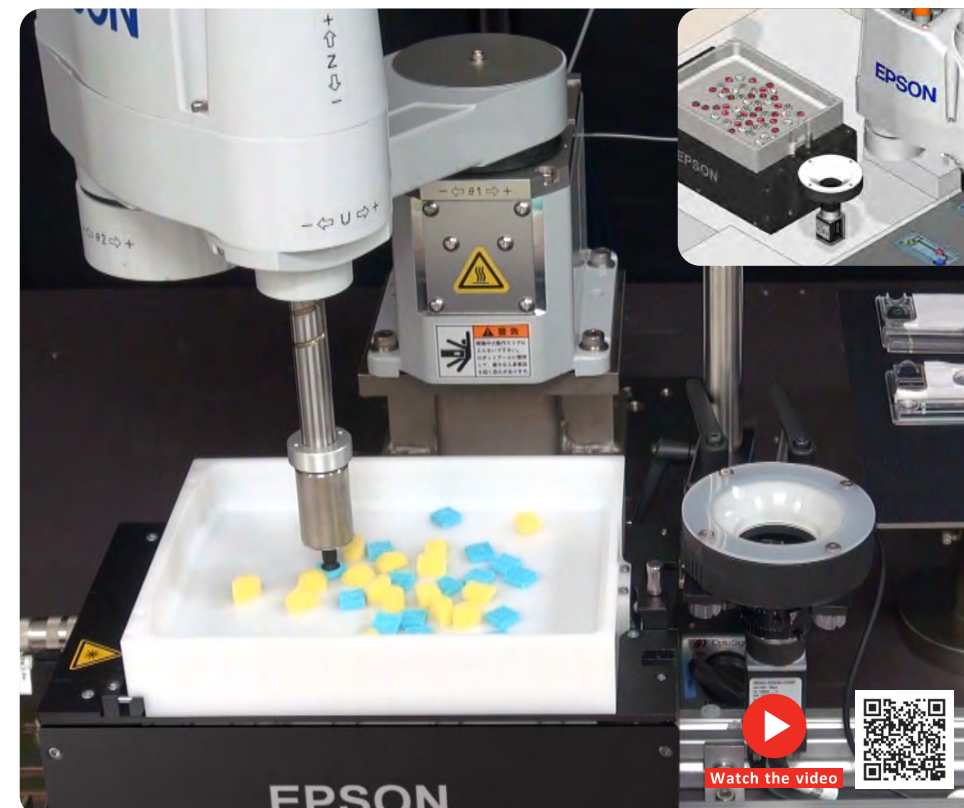
Adoption of parts feeders compatible with general-purpose materials reduces the cost and installation space

Flexible Production

Space Saving

Manpower Saving

Boost Factory Utilization



Watch the video



SCARA robots



Parts feeding system



Image processing system

4 Conveyance

Problem

Lack of human resources for simple tasks and tasks that require high speed and precision Demand for high-mix low-volume production Reduction of small part sorting errors

Solution

Robot automation of all processes from the loading to unloading of parts
.....
Use robots and automatic sorting systems for automation of operations from sorting to placement

Effects of introduction

Flexible response to production conditions
.....
Reduced investment load by handling a wide variety of parts on a single line
.....
Efficiency through high-speed production by eliminating waste in materials, transportation, and space
.....
Avoid sorting errors to achieve stable operation

Loading and unloading components

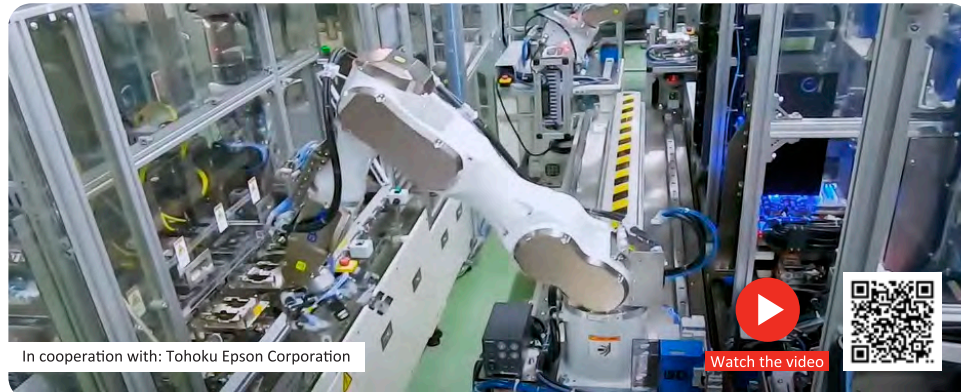
From simple tasks to high-speed and precise conveyance

Boost Factory Utilization

Flexible Production

Manpower Saving

Space Saving



6-axis robot

Identification and placement of small parts

Automatic sorting of a wide variety of parts

Boost Factory Utilization

Flexible Production

Stable Quality

Manpower Saving

Design Efficiency

Space Saving



Parts feeding system

5 Inspection

Problem

Variation in test results due to the surrounding environment and manual labor Shortage of personnel with specific skills Physical strain from prolonged visual inspection

Solution

Color inspection using a spectroscopic vision system that captures colors in a plane and does not overlook subtle differences
.....
Use color inspection management software for automatic recording of inspection results

Effects of introduction

Stable quality and reduced defect rate by eliminating manual labor and environmental impact
.....
Solves the issue of securing workers with specific skills
.....
Unmanned 24-hour operation improves production efficiency
.....
Early resolution of quality problems when they occur

Stable color inspection

Automated color inspection with spectroscopic vision system

Boost Factory Utilization

Stable Quality

Manpower Saving

Technical Transfer



Spectroscopic Vision System (spectroscopic camera, vision controller)



Epson Spectroscopic Vision Tools



SCARA robots

6 Packaging and Labeling

Problem

Lack of human resources for simple tasks such as boxing and labeling Physical strain due to continuous work and packaging Cost burden from outsourcing labels and forms Cost burden from updating labels due to legal changes

Solution

Use robot automation for simple sorting and packaging tasks such as packing boxes

.....

Use label printers and robots for the automation of label creation, label peeling, and label application

Effects of introduction

Shifting human resources from simple to high value-added operations

.....

Production planning that does not depend on workers

.....

On-demand label creation reduces wasted costs and man-hours

.....

Maintain and improve product and packaging quality

Sweets boxing Process

Picks sweets moving on the conveyor and packs them in boxes

Boost Factory Utilization

Manpower Saving



SCARA robot

On-demand printing and pasting of labels

Automation from label creation to label application

Boost Factory Utilization

Manpower Saving

Environmental Consideration



Color label printer

6-axis robot

7 Equipment Installation and Maintenance

Problem

Concerns regarding feasibility and operations, from the concept of automation to mass production and maintenance Cost burden for consulting, outsourcing, etc. Lack of human resources with technical expertise

Solution

Use software to simulate and verify the feasibility of automation

.....

Use an operation monitoring system for continuous recording and early detection of abnormalities

.....

Use smart glasses for remote maintenance follow-up

Effects of introduction

Reduce man-hours and costs by designing equipment based on simulations

.....

Preventive maintenance by monitoring operations

.....

Saving manpower on production lines

.....

Solves the problem of securing skilled workers

.....

Fostering the next generation with remote assistance

Simulations and monitoring operations

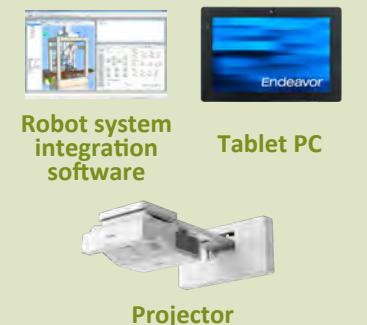
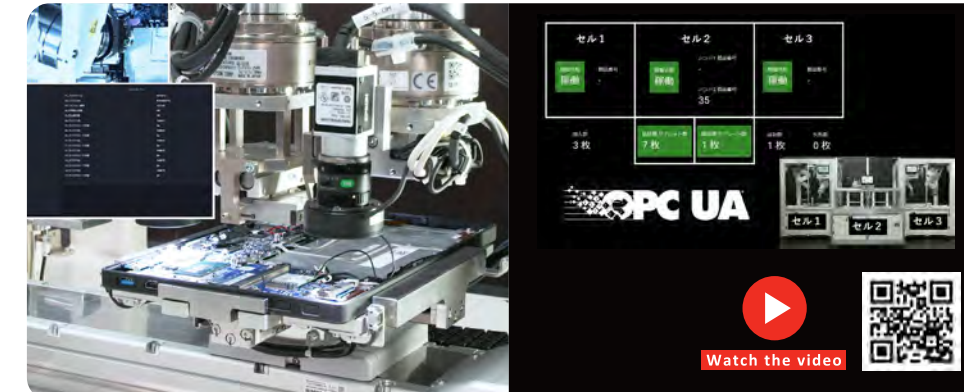
Visualizes the feasibility of automation and operation status

Stable Quality

Design Efficiency

Boost Factory Utilization

Manpower Saving



Support for operation and maintenance

Remote assistance with smart glasses

Boost Factory Utilization

Manpower Saving

Technical Transfer



7 Equipment Installation and Maintenance

Problem

Equipment might have standard values for floor vibration, but lack of measurement know-how forces reliance on outside vendors

Internal equipment has no standard for floor vibration
A standard needs to be created, but unable to do so

Product defects have occurred
Cannot figure out how to improve yield even after performing a lot of research

Solution

A smart vibration sensor allows in-house measurement of vibrations, which previously required outsourcing to expert contractors

Visualization of vibration allows the company to set appropriate vibration standards in-house after verifying the impact on the equipment

A smart vibration sensor allows visualization and verification of the effectiveness of vibration countermeasures that could cause a loss in yield

Effects of introduction

Saves time and money
Easy to visualize the source and type of unwanted vibration at the manufacturing site

Allows the status of equipment to be grasped and quantified, previously estimated by the person in charge
Contributes to the efficiency of day-to-day manufacturing operations

Anyone can measure vibration

By measuring low-frequency microvibrations*¹, it is possible to find vibrations that cause manufacturing issues that were previously unknown

*1 Frequency response
Frequency range: Approx. 460 (Hz) DC Tripartite graph range: 1 to 406.37 (Hz)

Easy vibration measurement by anyone, anytime

Easy visualization of vibrations with a tripartite graph

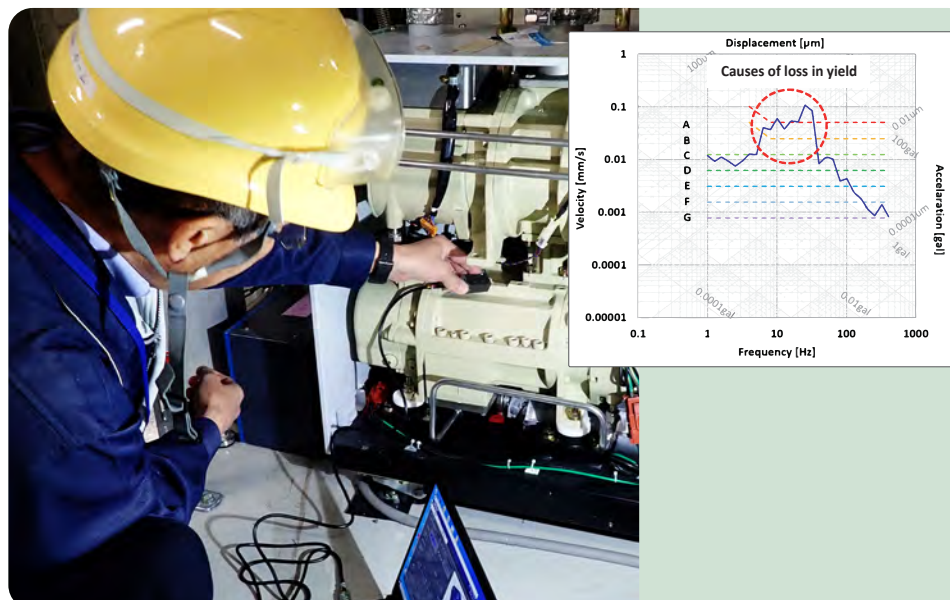
Design Development Efficiency

Optimization of Placement

Boost Factory Utilization

Stable Quality

Defect Rate Reduction



Vibrometer

Epson A750 Viewer

8 Back Office

Large format printing | CAD, drawings, and even internal educational posters



On-demand printing is available for blueprints, CAD, educational posters in factories, etc., in the number of sheets needed when needed. This reduces the cost burden for outsourcing and the wasteful disposal of large orders, to consider the environment.



Watch the video

Large-Format printer



Print & copy | Supporting business efficiency in the office



Utilize the various functions of multifunction printers to go paperless and streamline daily operations. Reduce running costs with a plan tailored to your needs. Low power consumption also contributes to the reduction of environmental impact.



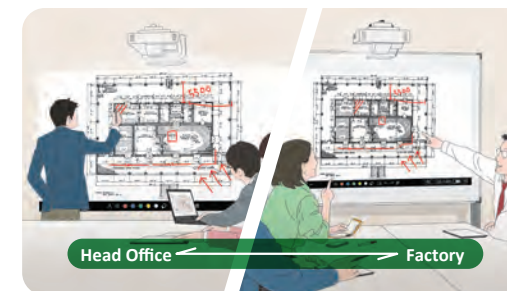
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Business Printers



From meetings to the monitoring of production line operations

Various uses in a variety of locations



Projectors with interactive functions allow users to write on the projected image with a special pen, and save and share data. For example, it is effective for remotely monitoring production numbers, yield, and the start/stop of operations on a large screen.



Watch the video

Projector



Recycling and upcycling paper | New resource cycle to be completed in-house



Used paper is recycled into new paper without using water*¹. CO₂ emissions related to paper disposal and transportation are reduced, which not only fosters a sustainable environment, but also raises employees' awareness of the Sustainable Development Goals. We will also create opportunities for a diverse range of people to play an active role in our recycled paper operations, such as by proactively hiring people with physical disabilities.

*1: A small amount of water is used to maintain humidity in the equipment.



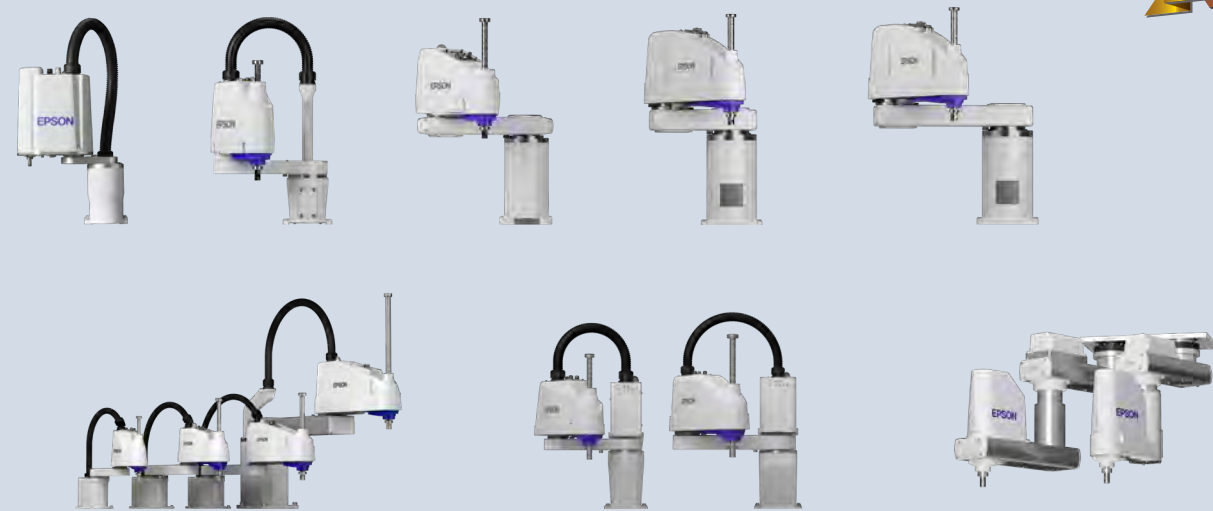
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PaperLab In-office Dry papermaking System



Proposing worldwide solutions from the manufacturing site to the office

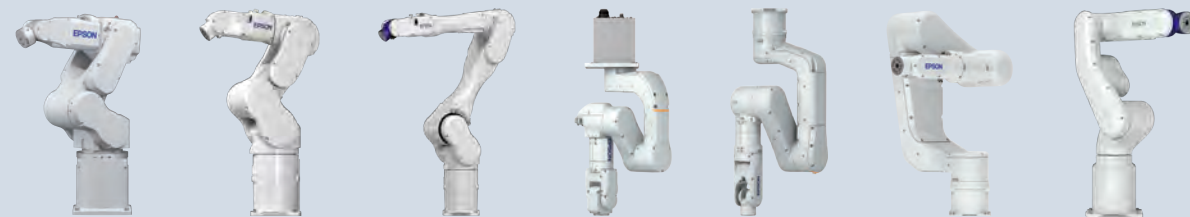
Industrial Robots (SCARA robots)



Epson's SCARA robots have maintained
No. 1 global market share. *1



Industrial Robots (6-axis Robots)



Robot System Integration Software



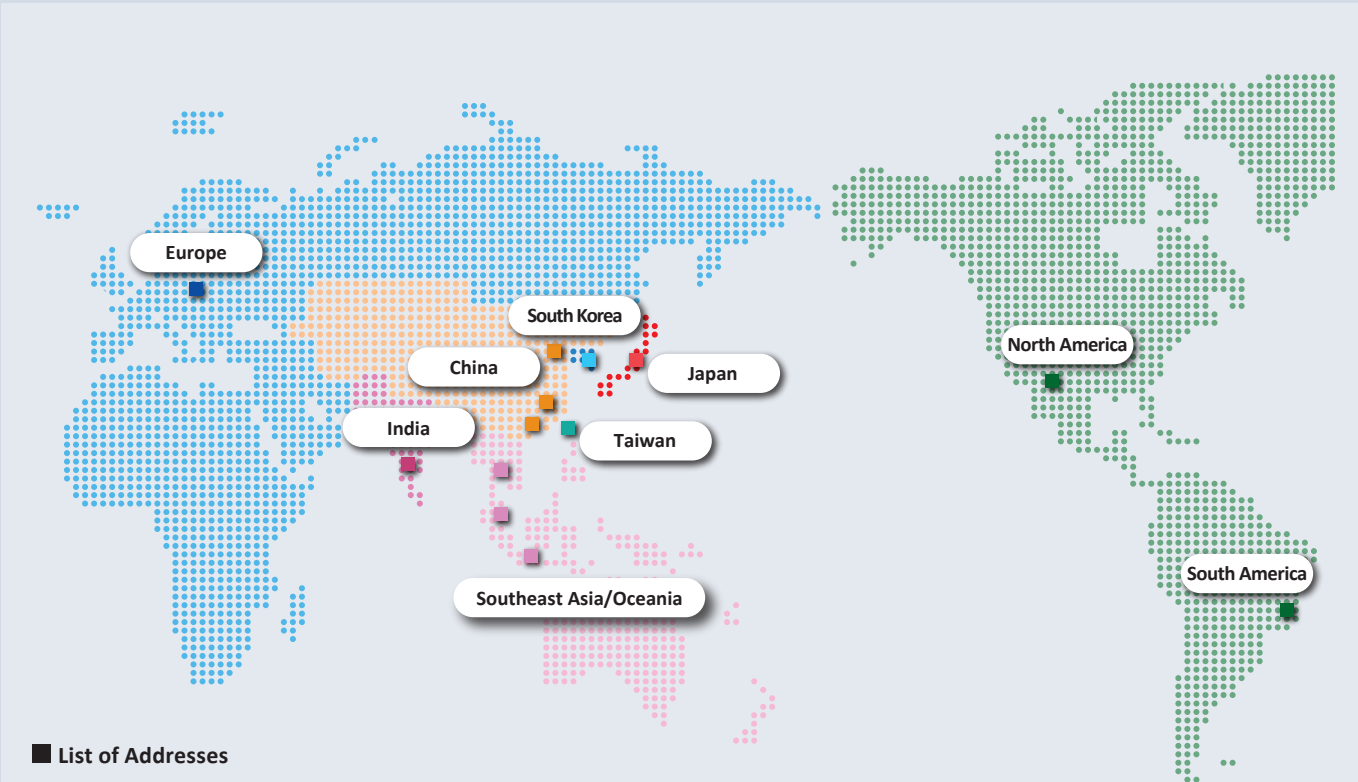
Vision System



Force Sensing System



Part Feeding System



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Spectroscopic Vision System



Vibrometer



Micro Injection Molding Machine



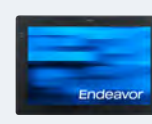
Label Printers



Smart Glasses



Tablet PC



Inkjet 3D Object Printing Equipment



Inkjet Devices for R&D



Large - Format Printer



Busisness Printers



PaperLab In-Office Dry Papermaking System



Dot Impact Printer



Disc Duplicators



Projector

