

Robotization as a key factor in maintaining competitiveness

Maintaining competitiveness is inextricably linked to increasing efficiency, often understood as speed of execution. The problem, however, is usually maintaining accuracy. A common response to this is to introduce the latest technologies into manufacturing and service processes. The right solutions increase productivity while reducing costs. Naturally – companies that introduce them first can quickly leave competitors behind.

An example of a technology whose introduction can make a difference to a company's future is industrial robots. The exact figures, of course, depend on the specific application, but general estimates suggest that introducing a robot to perform one key task in a production

line can increase productivity by up to 40%. Simply put, robots can increase speed, accuracy, reliability and repeatability. They also generally use less space in the production space than a conventional workstation. Thanks to technological developments, robots have become affordable even for small and medium-sized businesses. They are fast, compact and can be set up to interact with traditional automation or support processes performed by employees. This makes them easy to implement and use. But what can they actually do? Which processes should be robotized first? How should the layout of the production space be rearranged?

What about scalability? Today's robots are available in sizes suitable for handling objects ranging from a few grams to several thousand kilograms. Popular types include SCARA robots, Cartesian robots, and single- or multi-axis robots, which can be used in stand-alone applications dedicated to a single process or as groups carrying out successive processes. Yamaha's YK-XG SCARA robot has been applied to the REECO Robots series.



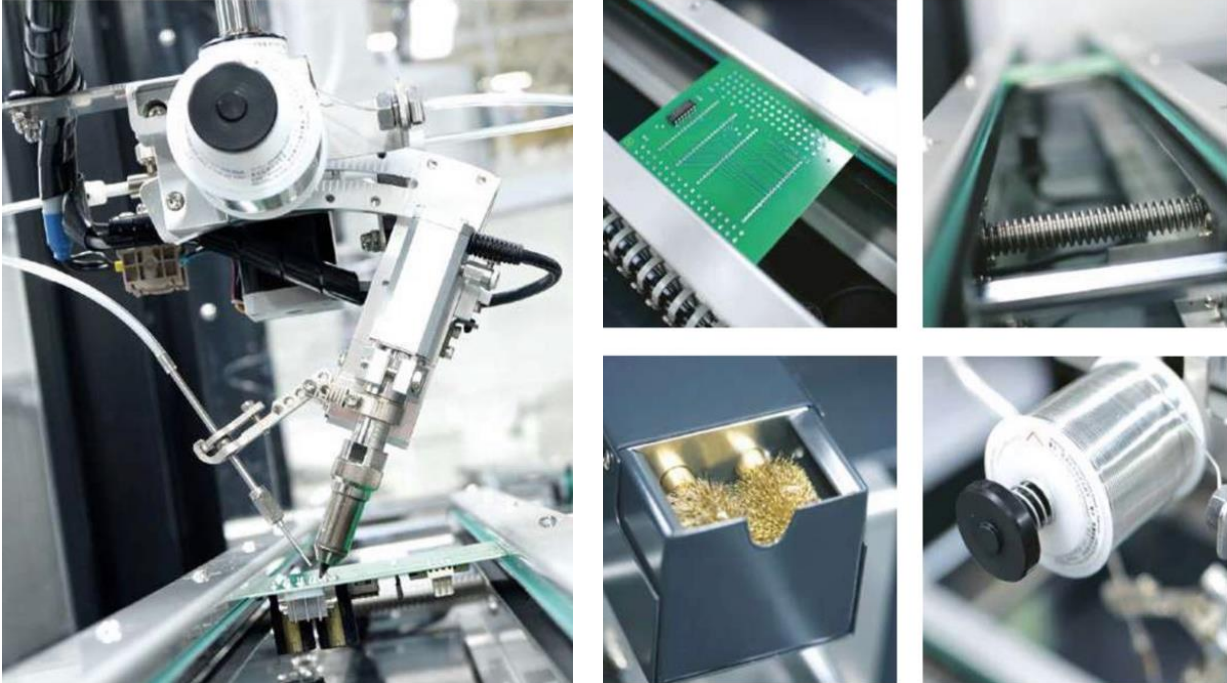
From one to multiple processes.



YAMAHA has extensive and long-standing experience in production automation in many industries. The industrial robots it supplies, particularly the SCARA type, are well suited for a wide range of assembly processes. An excellent example of their implementation is the REECO Robot series. The devices included in it allow you to automate a specific process, such as soldering, screwing, dispensing or applying protective coatings. In the REECO Robot series, the YAMAHA SCARA YK-XG manipulator has been integrated with, among other things, a conveyor and safety cage, creating a turnkey solution that can be quickly installed in an industrial plant. The device can operate both in-line and off-line. In the latter case, workpieces can be fed in manually or via a feeder. REECO robots allow manufacturers to introduce robotic technology into their factories in a flexible and scalable manner. Processes previously performed manually, such as soldering wires or through-hole components, tightening screws to a specific torque, batching or applying coatings, can be individually automated to provide greater speed, repeatability and predictable cycle times.



REECO RE-2100 soldering robot



The REECO soldering robot allows for the automation of the assembly of through-hole components on PCBs. Relative to alternative solutions, the robot has low power consumption and does not require carriers of expensive materials, nitrogen shielding, or washing of the flux used in the soldering process. This makes cost-effective with its use already small- and medium-volume production.

The design is based on a soldering head with a binder feeder mounted on a YAMAHA SCARA robot. This allows the creation of precise solder joints according to the programmed scheme. The PLC used controls all auxiliary equipment, such as the transport, soldering iron generator, wire feeder and tip cleaning station, which significantly simplifies and speeds up the programming of the process.

GENERAL INFORMATION

- Machine equipped with edge transport
- Automatic format/PCB positioning
- SMEMA communication enabling the operation of several devices in a line
- Automatic, programmable binder feeding
- Programmable temperature and contact time in the soldering application

- Possibility to work with different types of tips - several dozen types of tips can be selected
- Easy - to - use control panel
- Automatic programmable tip cleaning system during operation
- 7" operator panel
- The width of supported applications: 350 mm
- The length of supported applications: 420 mm
- Max speed: 7200 pts/h - in dosing application
- Axis arm length: X: 350 mm, Y: 250 mm, Z: 150 mm, R: 150 mm
- Axis servo power: X: 200W, Y: 150W, Z: 50W, R: 100W
- Available rotation angle for axis: X: $\pm 140^\circ$, Y: $\pm 144^\circ$, Z: - , R: $\pm 360^\circ$
- Gearbox type of X, Y and R axis: Wave
- Z - axis gearbox type: Ball
- Axis repeatability: X: $\pm 0,01\text{mm}$, Y: $\pm 0,01\text{mm}$, Z: $\pm 0,01\text{mm}$, R: $\pm 0,04^\circ$
- Maximum load on the arm: 5kg
- The weight of the arm: 22 kg

ADVANTAGES

- Possibility to work in line thanks to SMEMA communication
- Operation with soldering wire with diameter from 0.5 to 1.5 mm, both with and without flux core
- Machine equipped with edge transport and SMEMA communication
- Automatic blade cleaning station

OPTIONAL EQUIPMENT

- Soldering in nitrogen shielding
- Positioning camera
- Visual data archiving camera
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