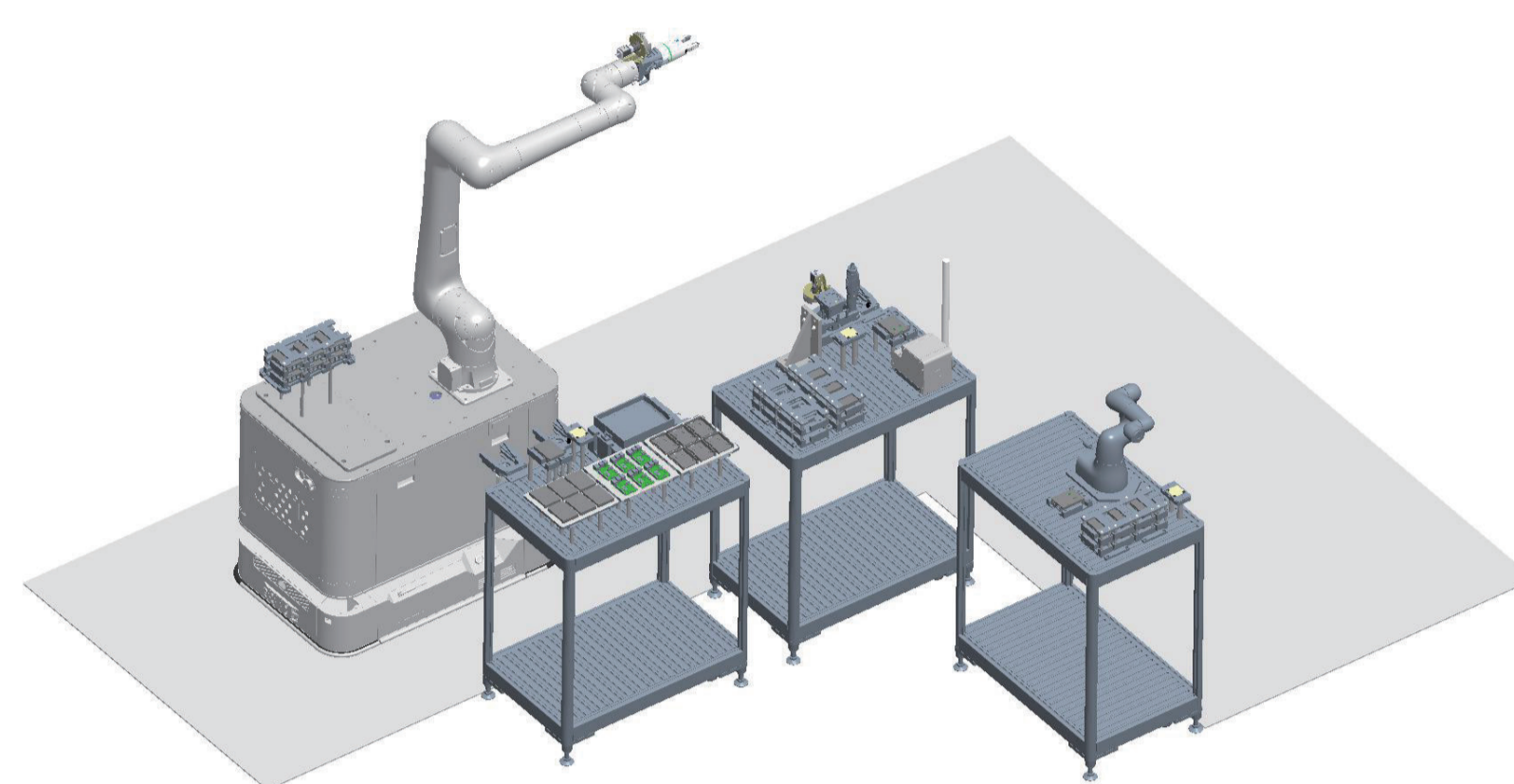**DENSO**

Automatic Transport/ Assembly System Utilizing AMR

– By installing the COBOTTA PRO in an AMR (Autonomous Mobile Robot), it can autonomously travel inside the multi-process, enabling automation of wide range of work.

Collaborative robots runs autonomously in the process and multi-process work can be automated over a wide range.

Combining a collaborative robot that can work in the same space as people with AMR enables automation over a wide range. Flexible automated systems can be built to match existing equipment and factory layouts.

Since the robot can move to various processes and switch tools for different tasks, a series of operations can be automated from part gathering to assembly and discharge.

Utilize QR codes to correct the robot position and switch work *Scheduled for release

A QR code attached to the destination work table is recognized to automatically calibrate the robot coordinates based on a coordinate system.
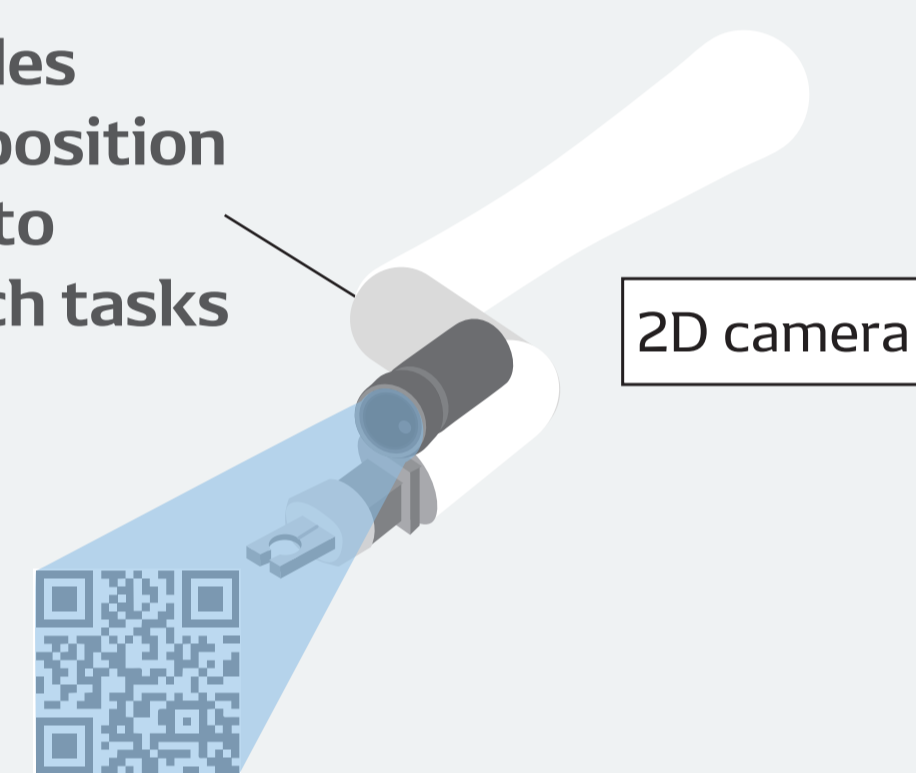Even if the relative position of the AMR and work table changes, the coordinates can be calibrated by recognizing a QR code without reteaching.

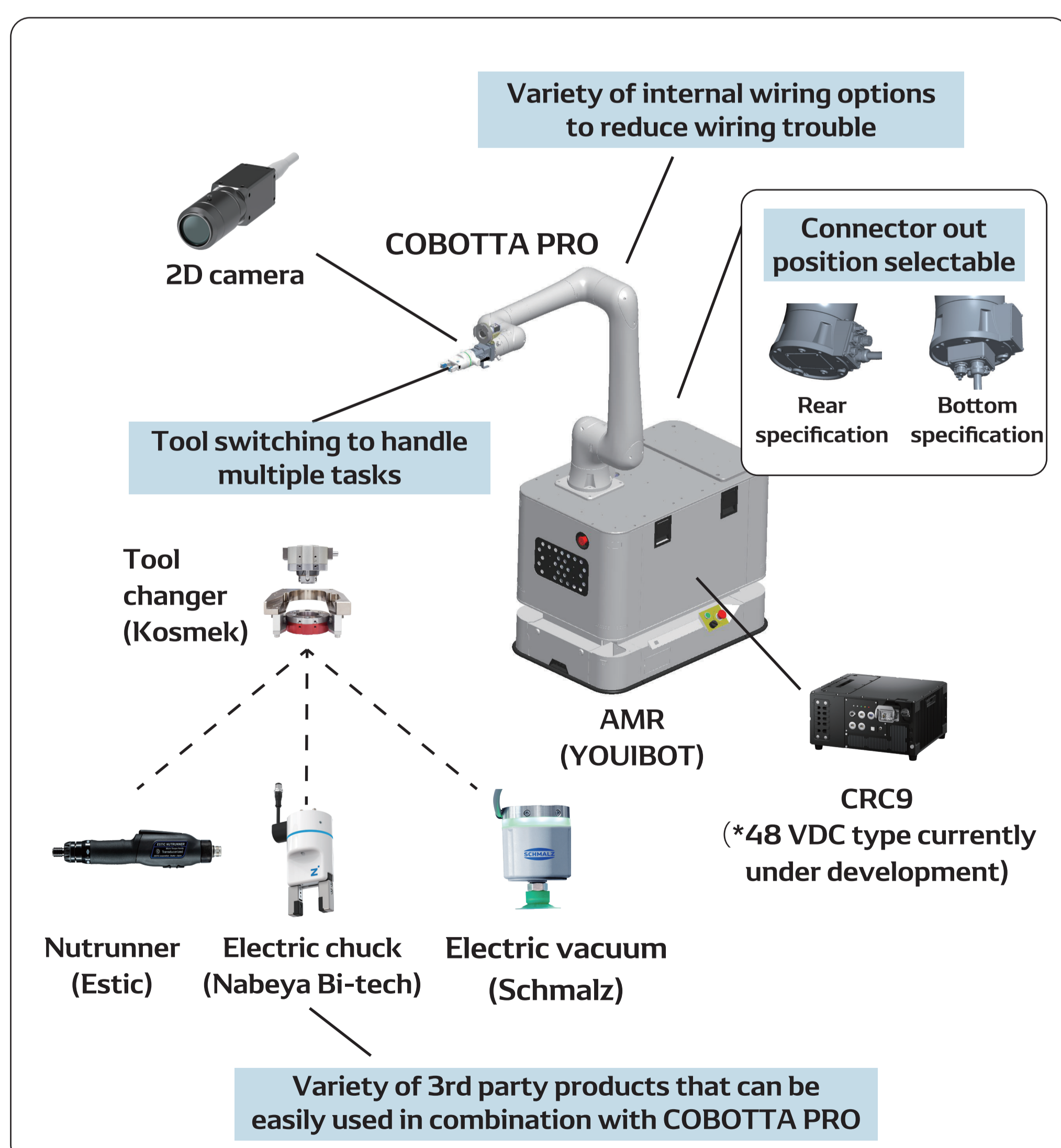With QR code, information can be added and work instructions can be assigned to the robot.
— If there is an operator: Transport completed product
— If there is no operator: Perform screw tightening

■Utilize QR codes
・Correct robot position
・Instruct robot to work and switch tasks

2D camera

System Configuration

Variety of internal wiring options to reduce wiring trouble

2D camera

COBOTTA PRO

Connector out position selectable

Rear specification / Bottom specification

Tool switching to handle multiple tasks

Tool changer (Kosmek)

AMR (YOUIBOT)

CRC9 (*48 VDC type currently under development)

Nutrunner (Estic)   Electric chuck (Nabeya Bi-tech)   Electric vacuum (Schmalz)

Variety of 3rd party products that can be easily used in combination with COBOTTA PRO

Work Process

1. An AMR with COBOTTA PRO moves to the kitting station.

2. A QR code on the kitting station is recognized (QR calibration is performed) to calibrate the coordinates.

3. The substrate, heat dissipation sheet, and cover are assembled.

4. An AMR with COBOTTA PRO moves to the screw tightening station.

5. A QR code on the screw tightening station is recognized (QR calibration is performed) to calibrate the coordinates.

6. A QR code is recognized (QR calibration is performed) to retrieve information on whether an operator is present.

7. If there is an operator, transport the completed product. If not, perform screw tightening.

8. An AMR with COBOTTA PRO moves to the completed product discharge station.

9. The completed product is discharged