

Picking Robot **MOTOMAN-MPP Series / MotoPick**

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Robot Division

Global Marketing Department

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MotoPick offers the solution.

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New MotoPick

1. Market for Picking.

2. Concept

3. MotoPick traditional

4. Flexible

5-1. Easy to Use

5-2. Easy to Use

5-3. Easy to Use

6. Global local development

7. System configuration

Picking robot

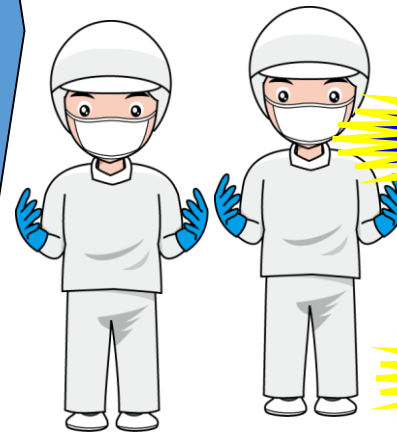
MOTOMAN-MPP3

MOTOMAN-MPP3S

MOTOMAN-MPK2F

How do I automatize the operation?

Isn't it difficult to teach operations to the robots?



Productive?

Profitable?

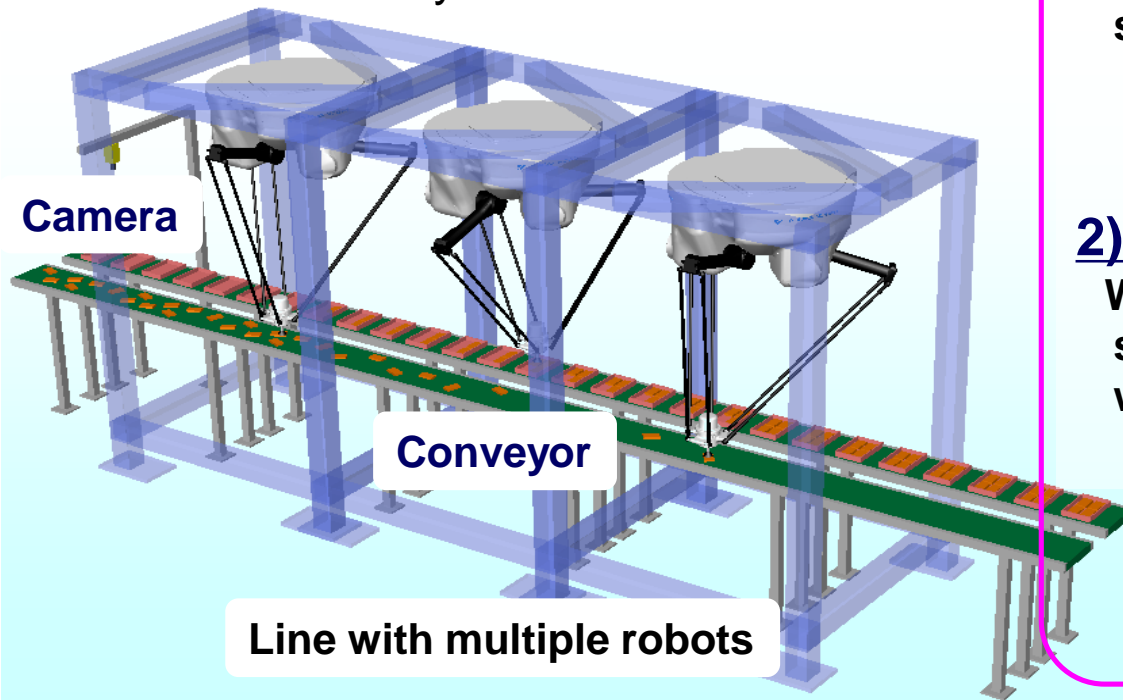
Flexible?

Automation which has been difficult to achieve can be easily realized!

MotoPick offers the solution.

What is MotoPick?

- MotoPick is an application software which assists the construction and operation of the system to carry the workpieces.
- It is aimed at the integrated operation of the vision, the other sensors, the robots, and the conveyors.



Two Features

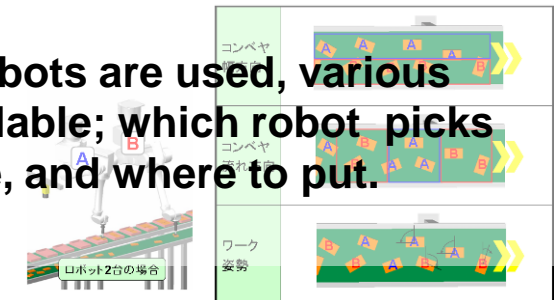
1) Teaching-less

The robot's operation can be set and adjusted with using the PC software for settings.

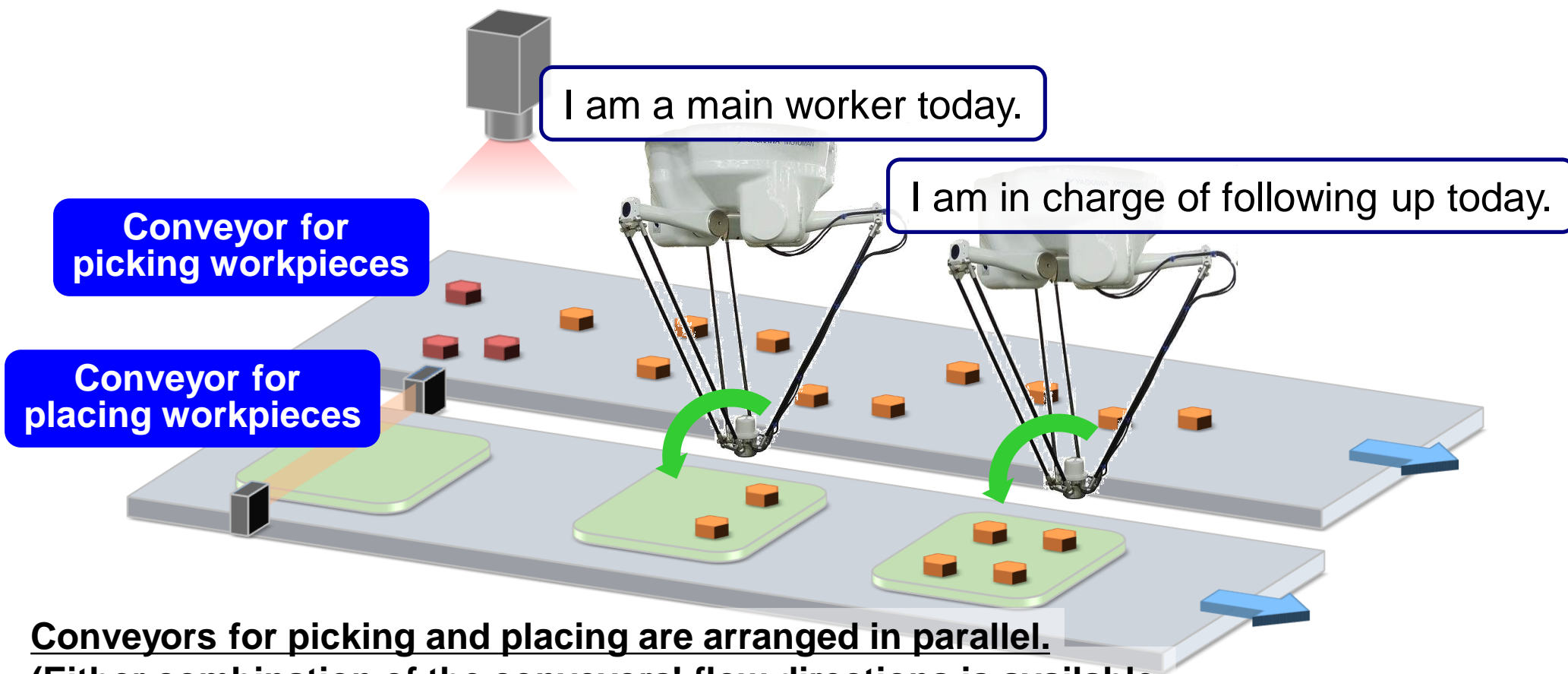


2) Scheduling

When multiple robots are used, various settings are available; which robot picks which workpiece, and where to put.



Adaptation Example Line 1: Balance Settings

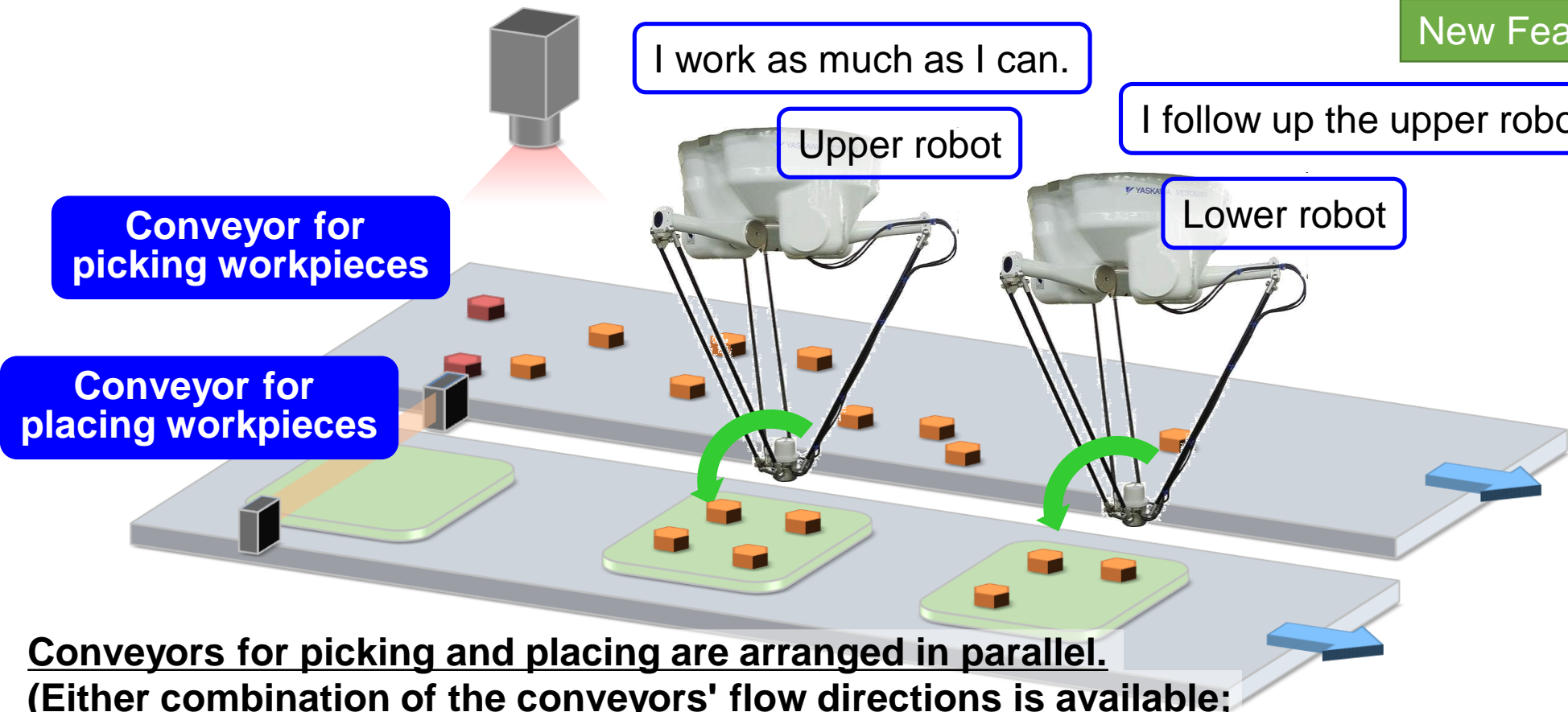


Conveyors for picking and placing are arranged in parallel.
(Either combination of the conveyors' flow directions is available;
the same directions or the opposite directions.)

Each robot picks and places the workpieces in a fine balance or unbalance according to the settings.

Adaptation Example Line 2: Upper Priority

New Feature



I work as much as I can.

Upper robot

I follow up the upper robot.

Lower robot

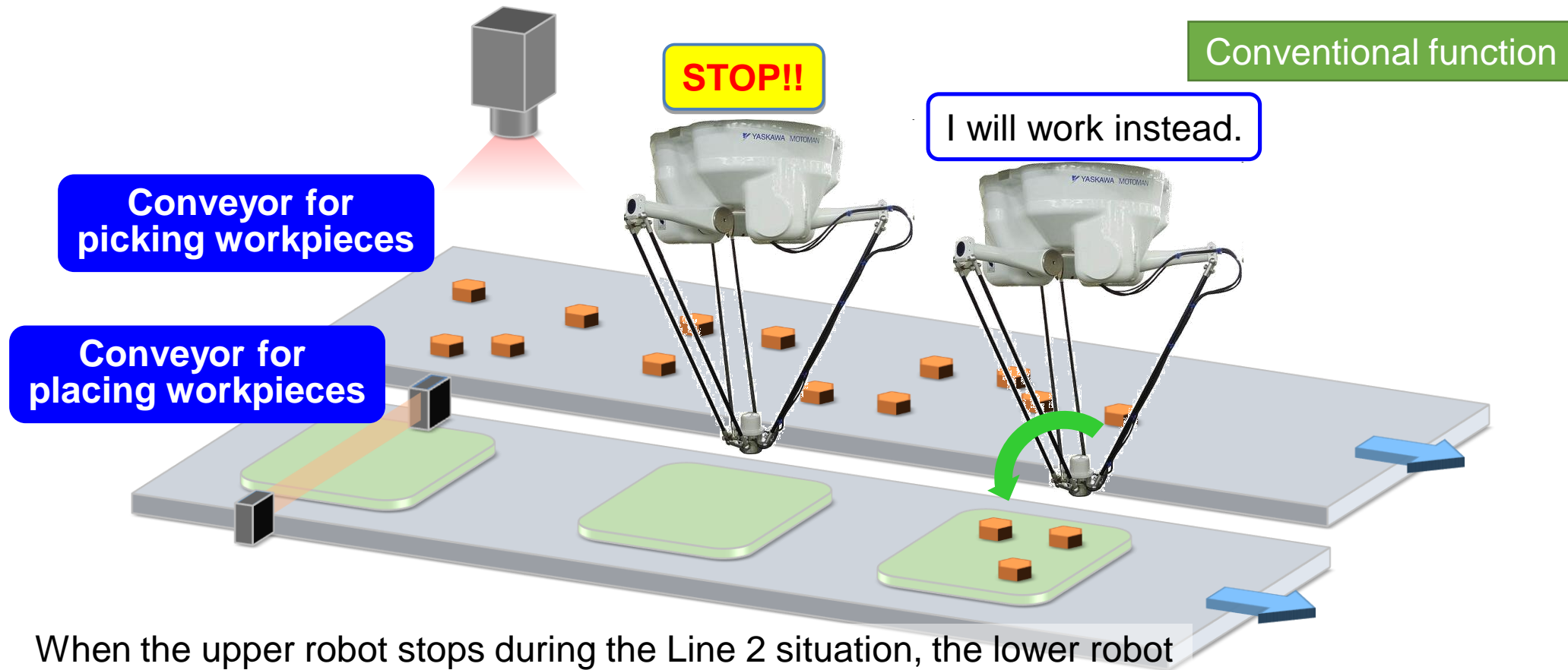
Conveyor for picking workpieces

Conveyor for placing workpieces

Conveyors for picking and placing are arranged in parallel.
(Either combination of the conveyors' flow directions is available; the same directions or the opposite directions.)

The upper robot performs the picking and placing operation as much as possible (preferentially).
The lower robot makes up for what the upper robot can not deal with.

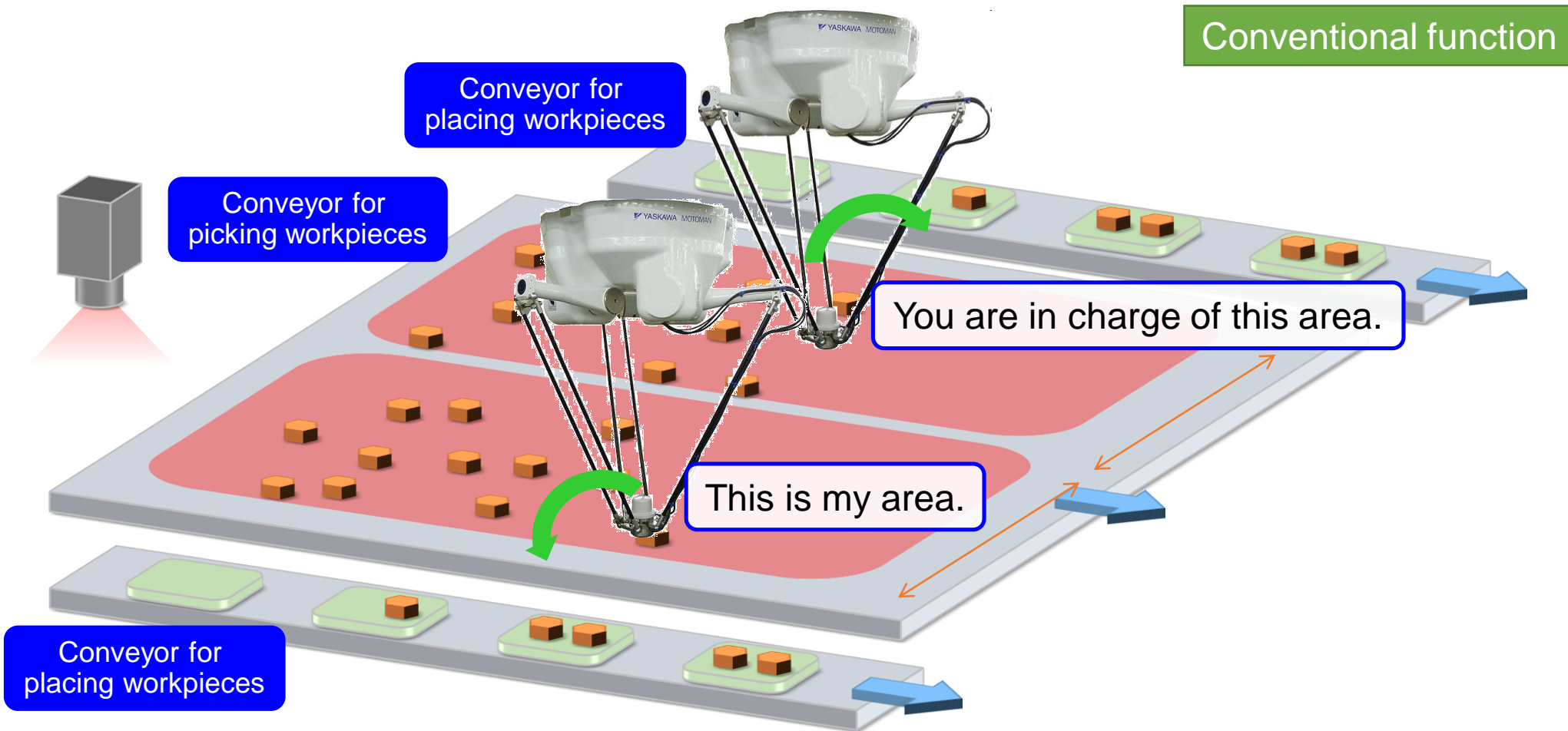
Adaptation Example Line 3: System Continuing (Restoration)



When the upper robot stops during the Line 2 situation, the lower robot performs the picking and placing operation as much as possible. After the upper robot is restored, they go back into the Line 2 operation.

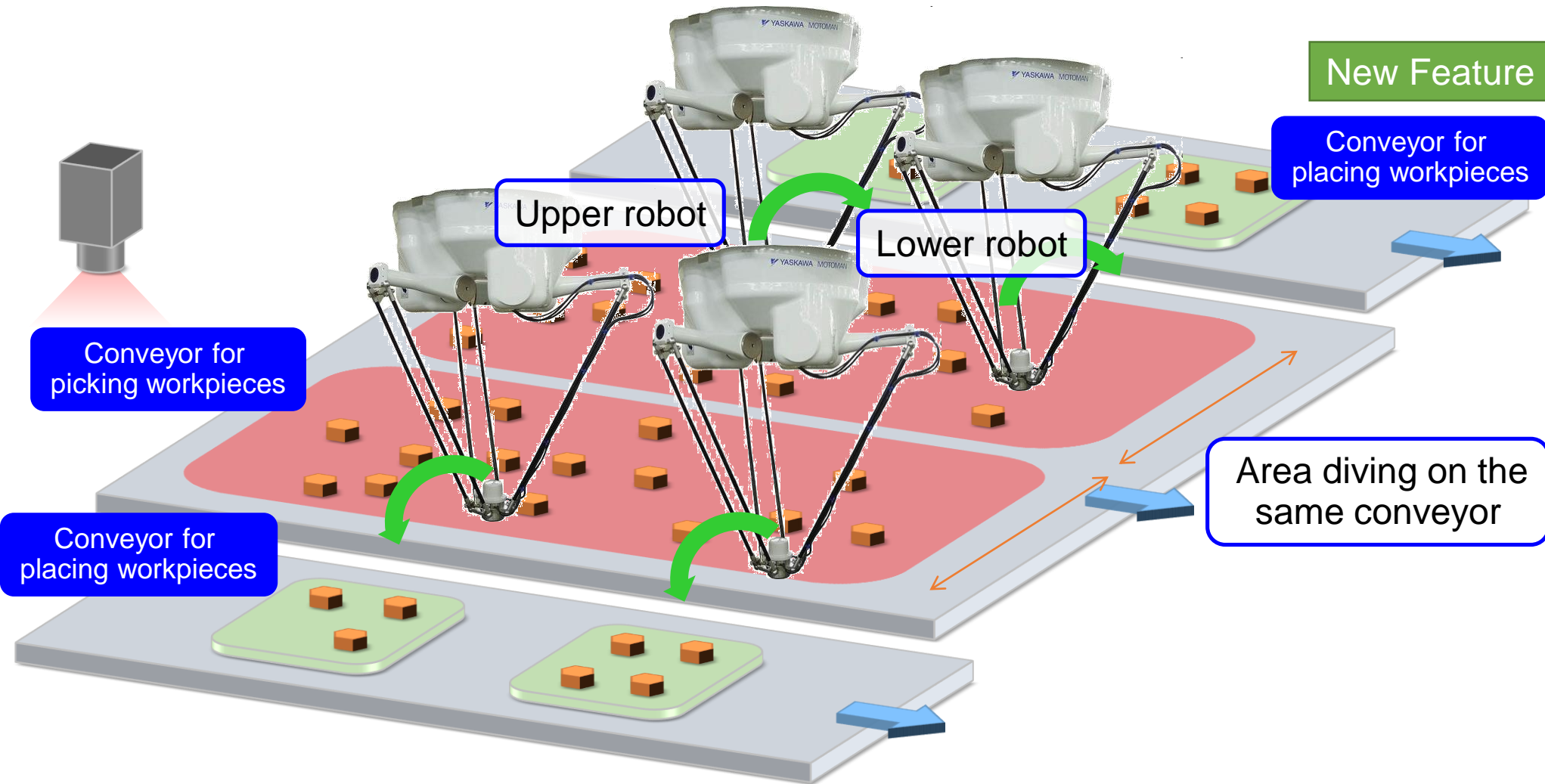
* However, if the stopped robot is to control the camera and the power source is cut off, the system can not continue.

Adaptation Example Line 4: Area Dividing



Robots can deal with the wide conveyor by dividing the areas that each robot is in charge of.

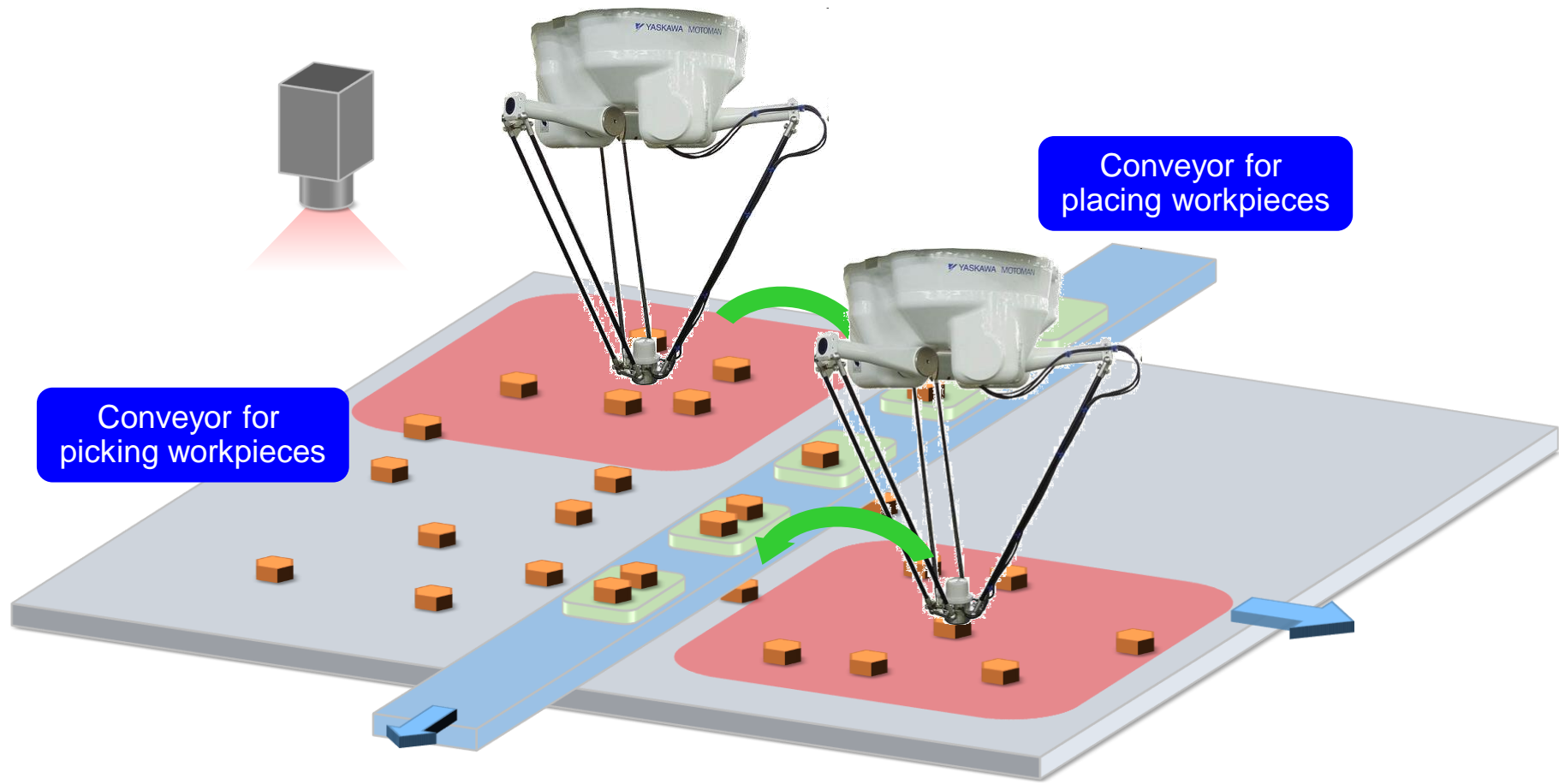
Adaptation Example Line 5: Combination of Prior Sorting and Area Dividing



For the robots of the same area, the load ratio and the upper priority are can be set.

Adaptation Example Line 6: Orthogonal Conveyor

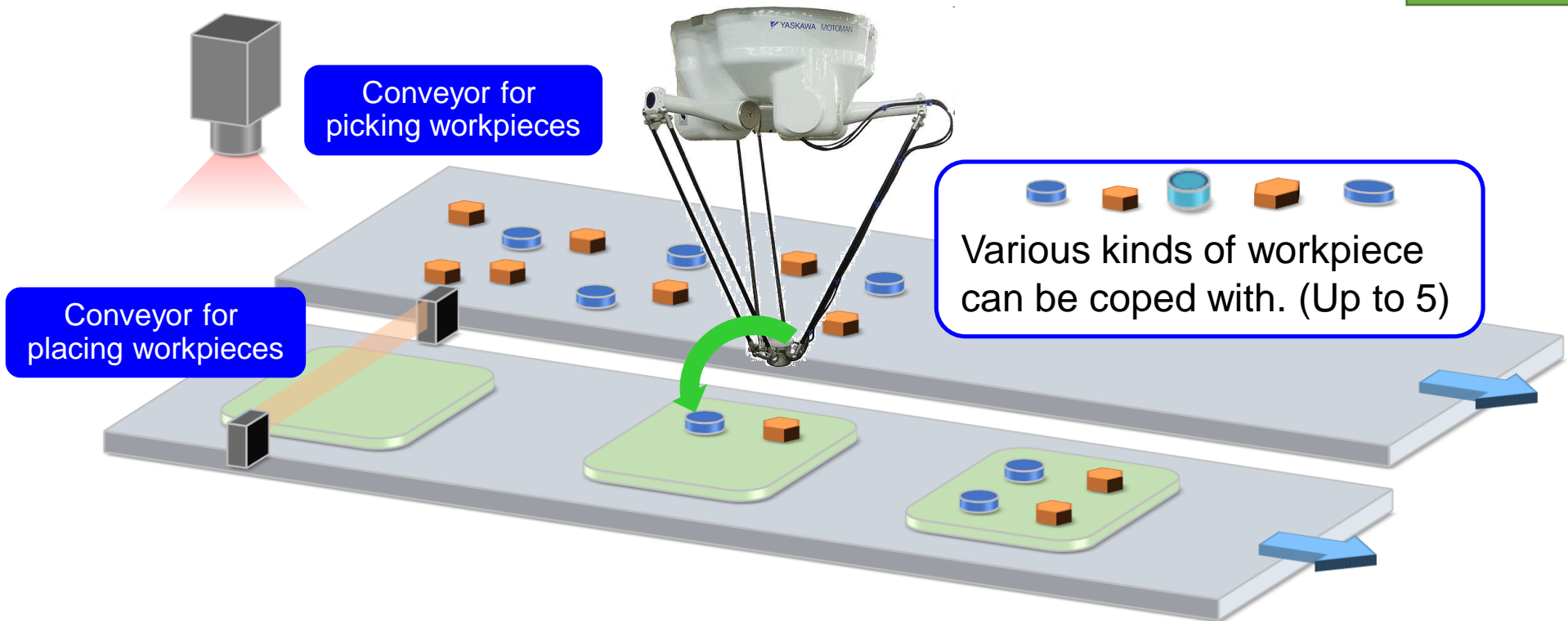
Conventional function



Even when the conveyors for picking and placing are orthogonal, operation can be performed.

Adaptation Example Line 7: Multiproduct Handling

New Feature

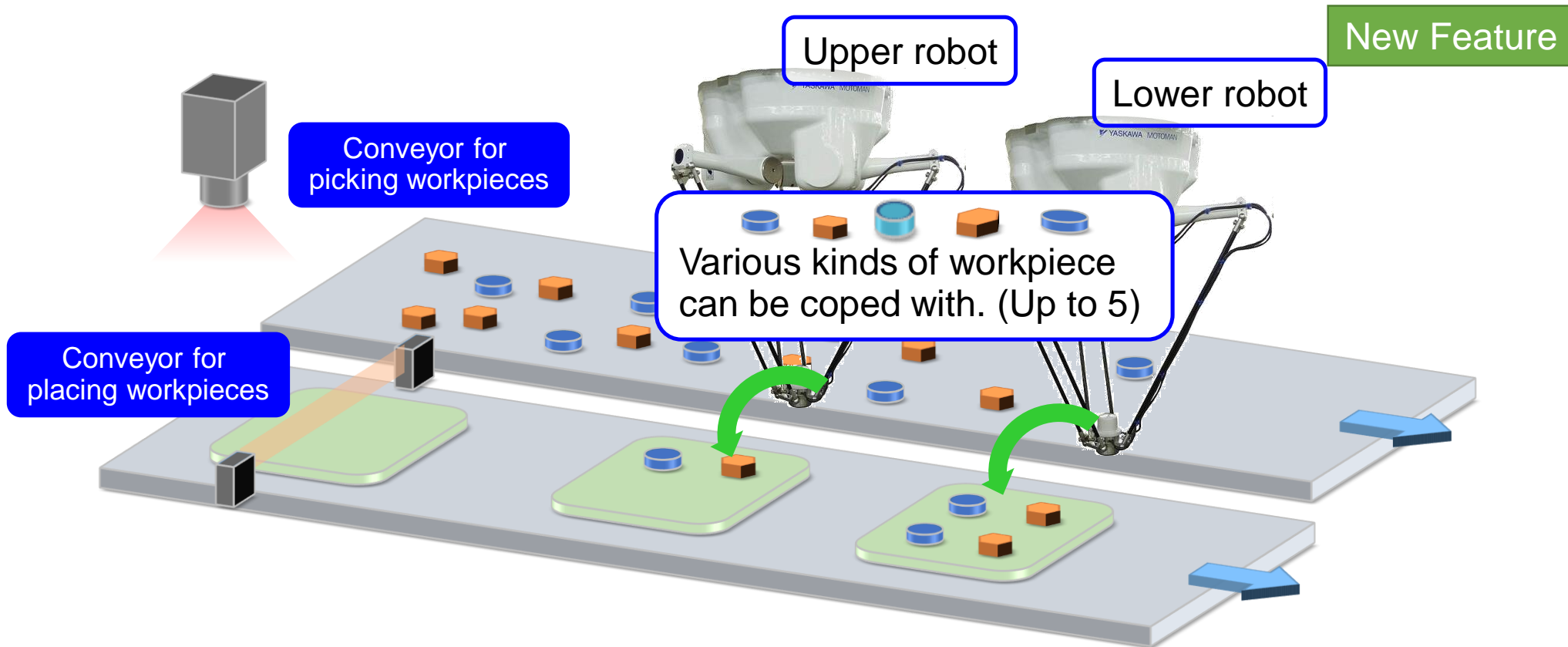


Conveyors for picking and placing are arranged in parallel.
(Either combination of the conveyors' flow directions is available;
the same directions or the opposite directions.)

With one robot, different products mixed on the conveyor for picking can be carried.

Adaptation Example Line 8:

Multiproduct Handling (with Multiple Robots)



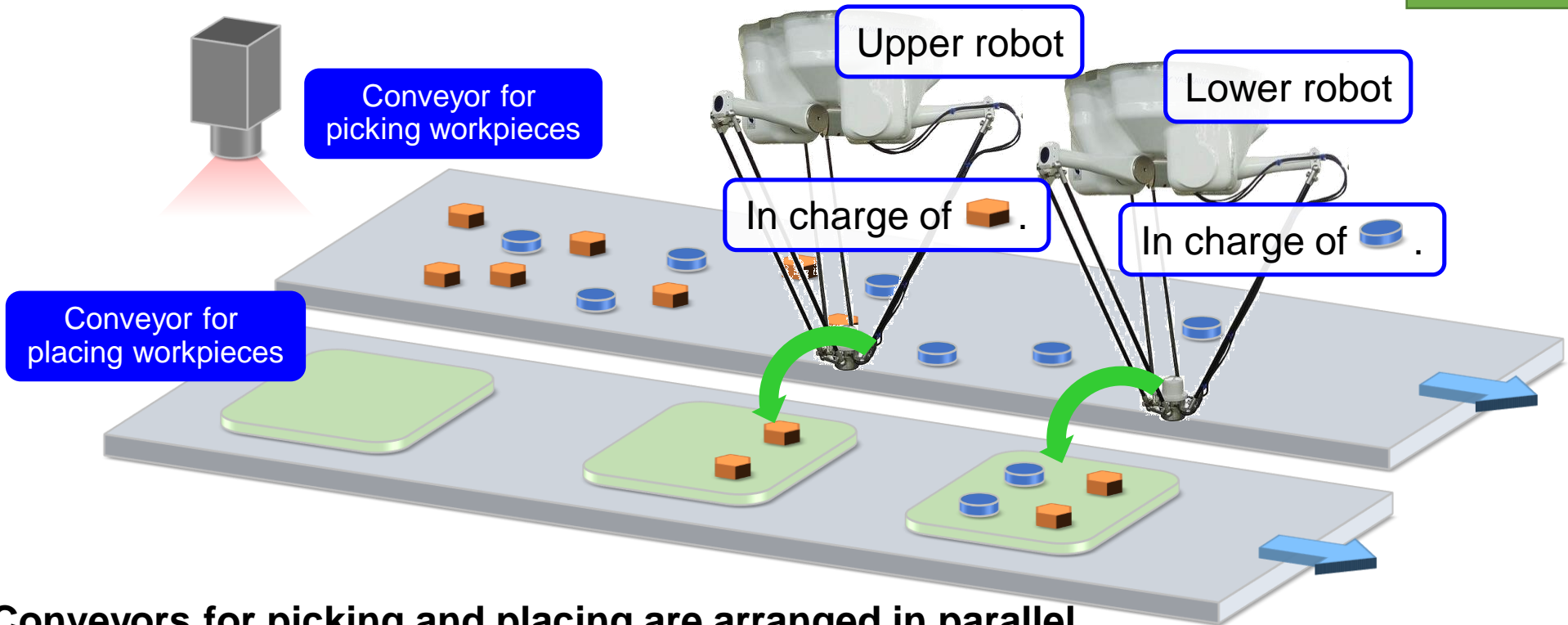
Conveyors for picking and placing are arranged in parallel.
(Either combination of the conveyors' flow directions is available;
the same directions or the opposite directions.)

With multiple robots, different products mixed on the conveyor for picking can be carried.

Adaptation Example Line 9:

Multiproduct Handling (with Multiple Robots)

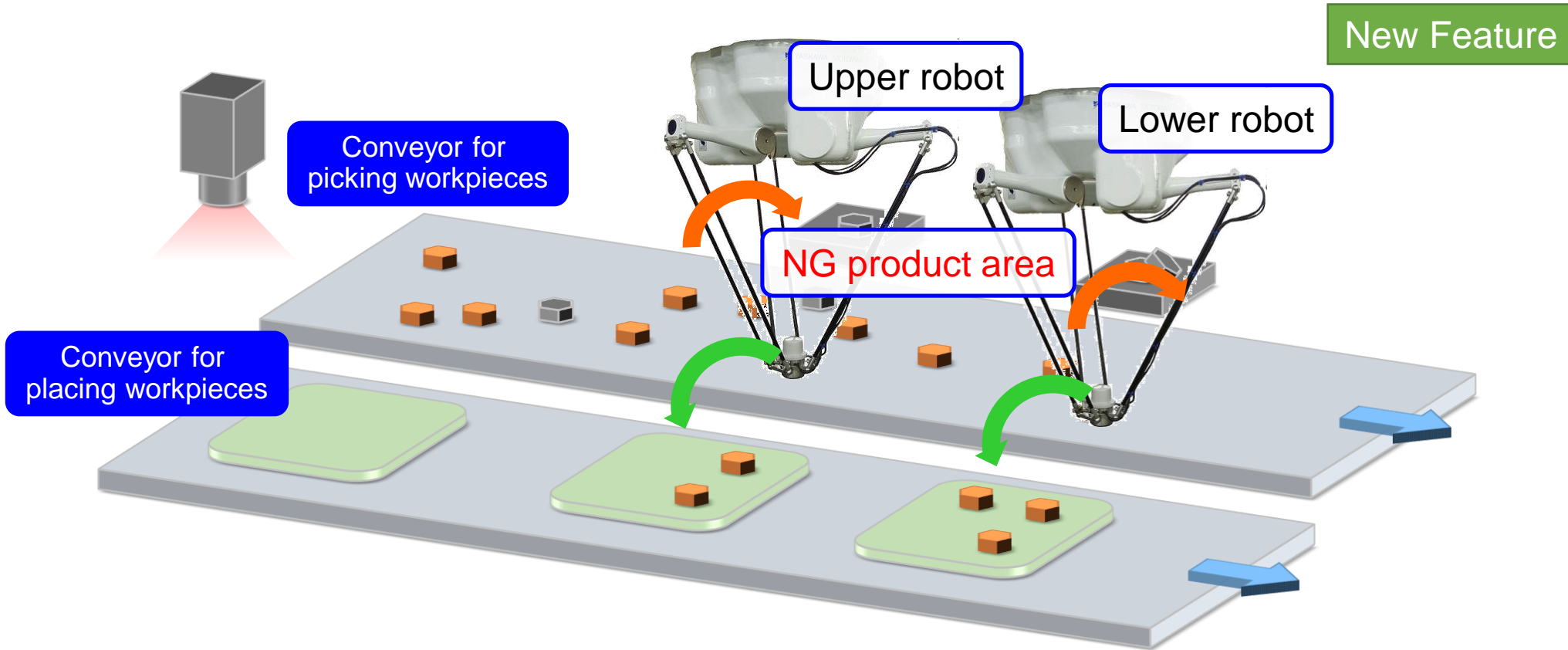
New Feature



Conveyors for picking and placing are arranged in parallel.
(Either combination of the conveyors' flow directions is available;
the same directions or the opposite directions.)

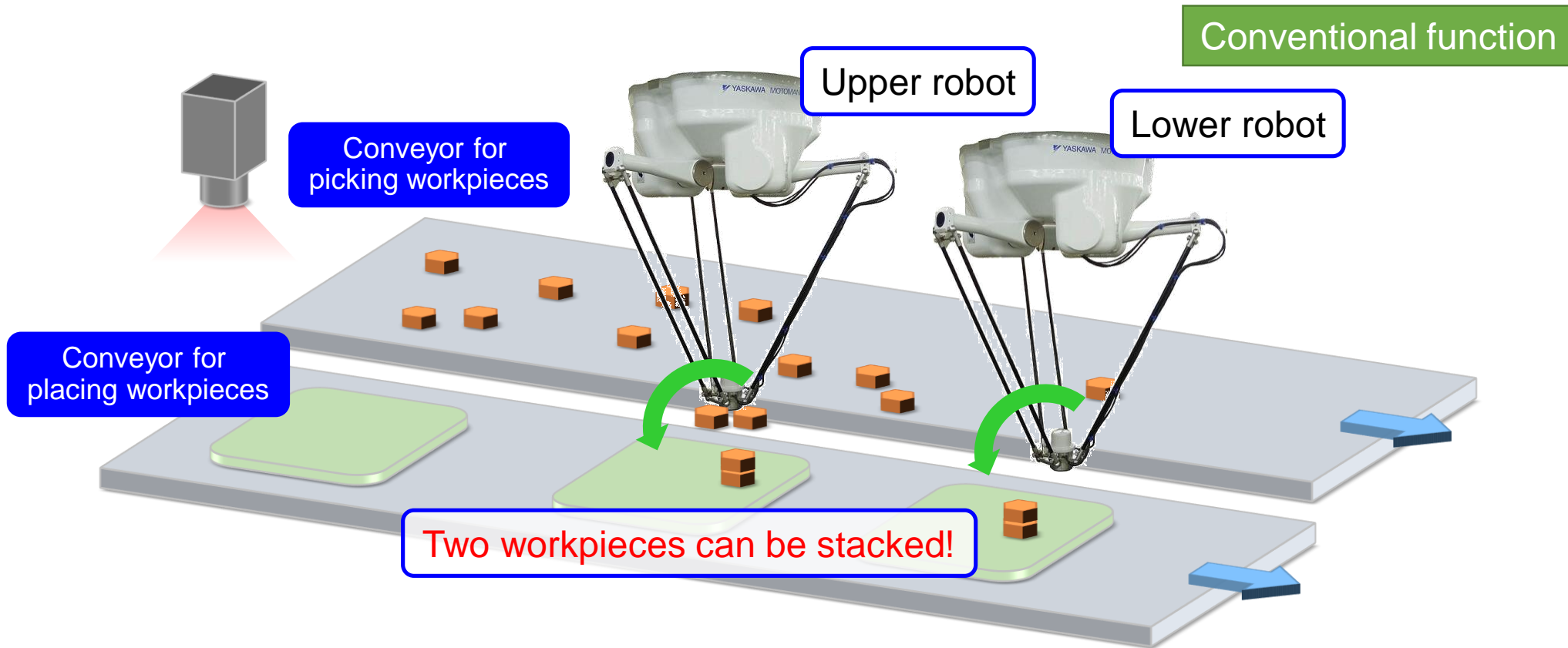
Each product to be carried is allocated to each robot.
Different products mixed on the conveyor for picking can be carried.

Adaptation Example Line 10: NG Judgement



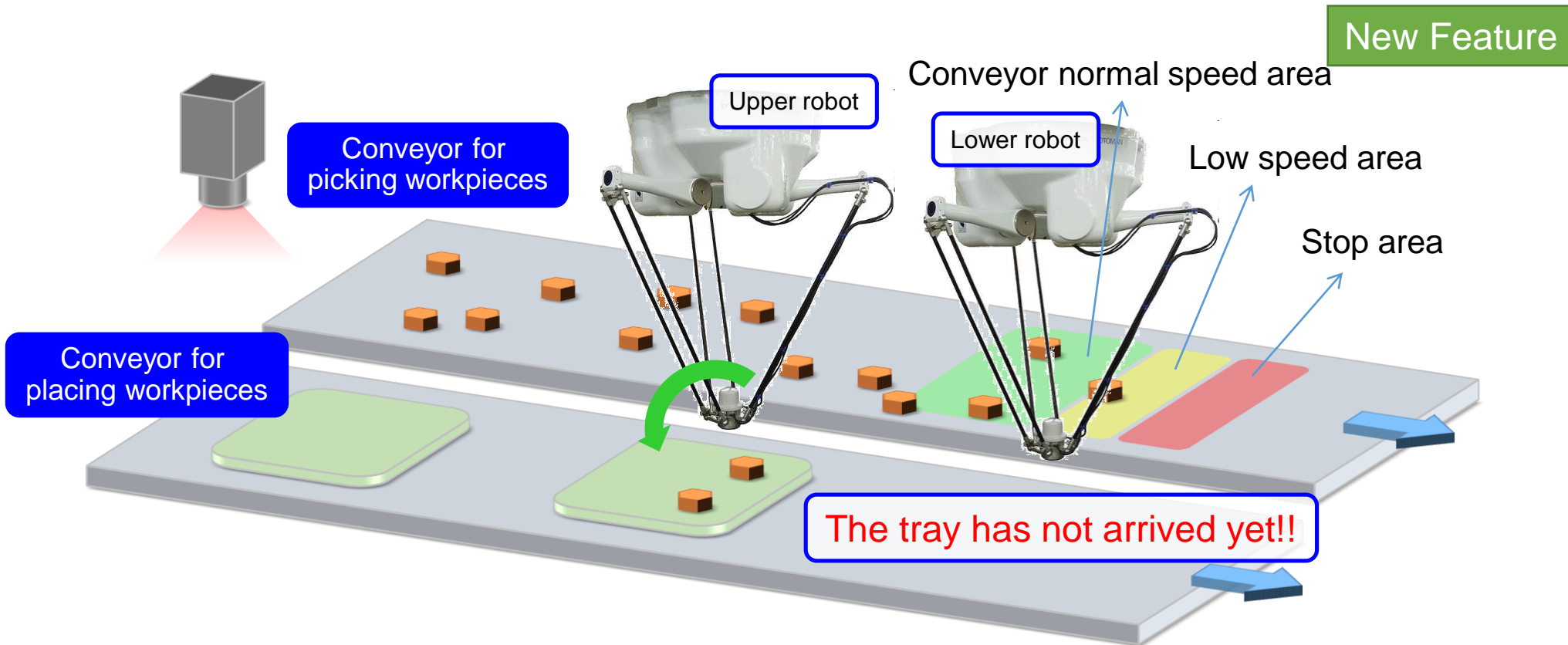
NG products are rejected to another area not to the tray.

Adaptation Example Line 11: Multiple Picking and Placing



Two workpieces are consecutively picked, and stacked to place.

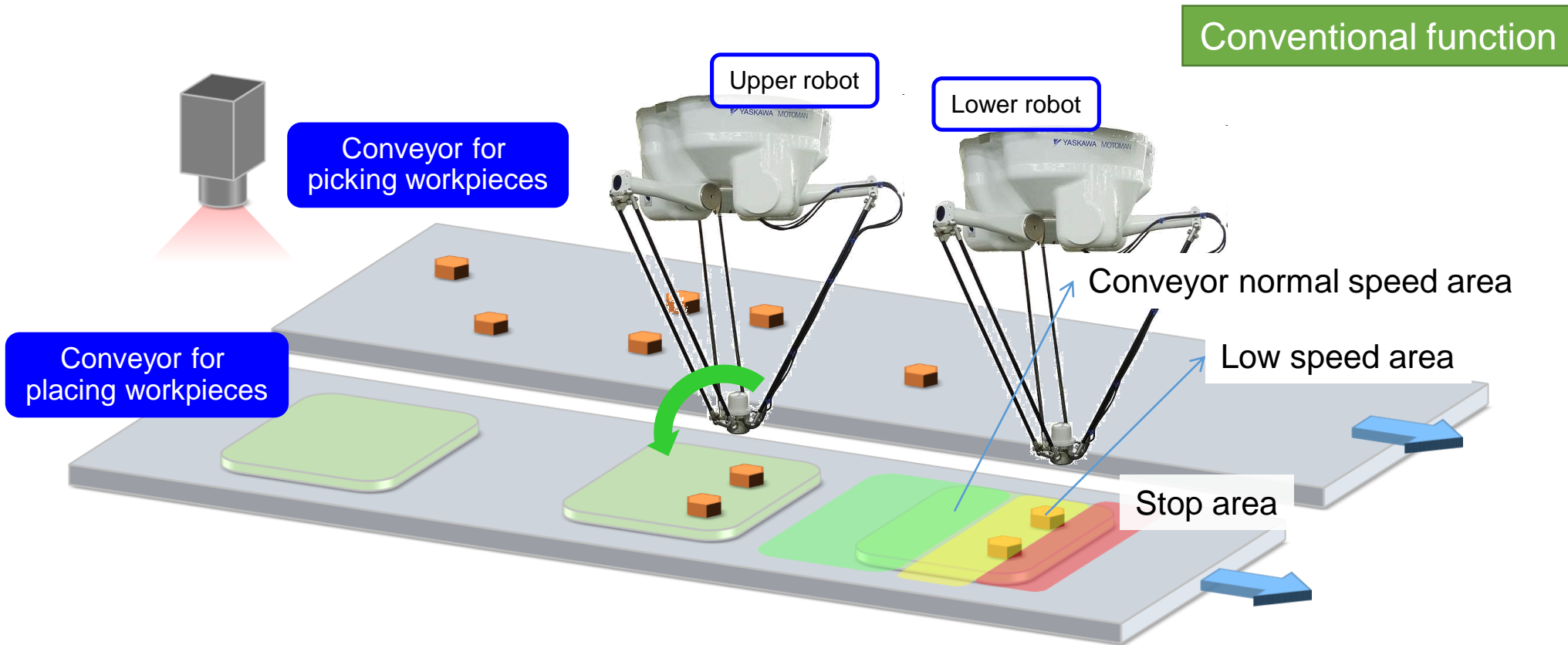
Adaptation Example Line 12: Prevention of Picking Loss



New Feature

When the tray does not arrive at the lower robot area, the lower robot slows down and eventually stops the conveyor speed in order to prevent the picking loss. Basically, this is controlled by the lower robot, but the upper robot can also control it. For another solution, the speed of the conveyor for placing can be accelerated when the tray does not arrive.

Adaptation Example Line 13: Prevention of Placing Loss



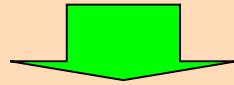
When the workpiece does not arrive at the lower robot area, the lower robot slows down and eventually stops the speed of the conveyor for conveying in order to prevent the picking loss. Basically, this is controlled by the lower robot, but the upper robot can also control it. The function of Line 12 is performed on the conveyor for placing.

New MotoPick 1. Concept

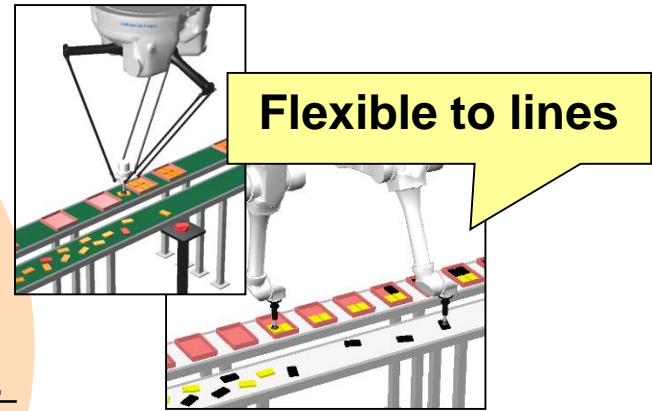
What is MotoPick?

Flexible

- Few compatible lines
- Cannot cope with picking loss



- Compatible lines are increased.
- Dynamic control



Global

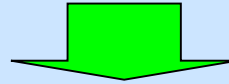
- Opening of the software
- Global needs

Various applications



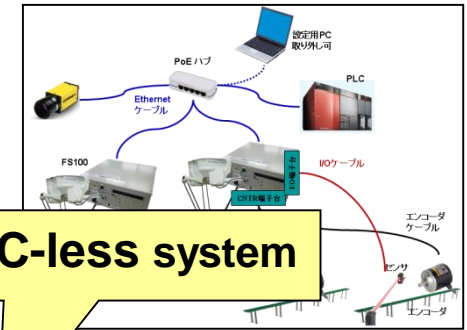
Easy

- Complicated wiring
- Difficult setting

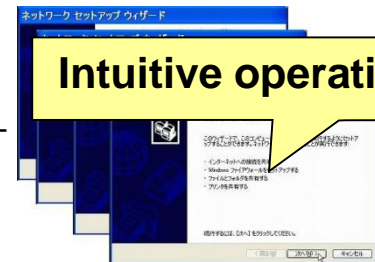


- Reduced wiring (PC-less)
- Support tool

PC-less system



Intuitive operation!!



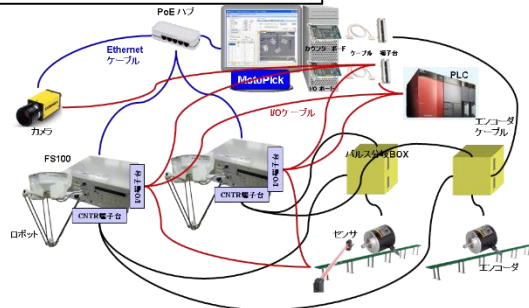
New MotoPick 2. MotoPick traditional

Problems of traditional MotoPick

Wiring is complicated

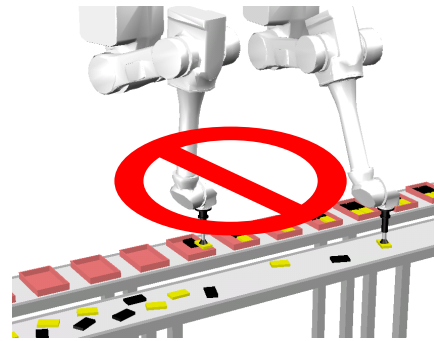
- Multi-wiring

2 robot configuration



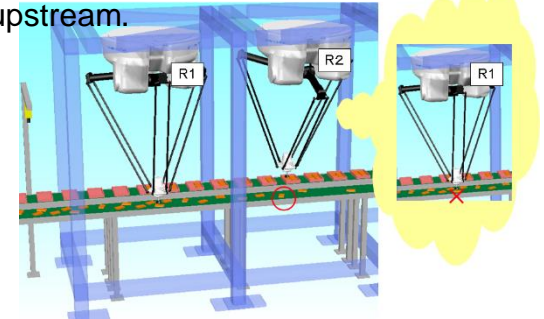
Adaptation line is ess

- Heterogeneous NG



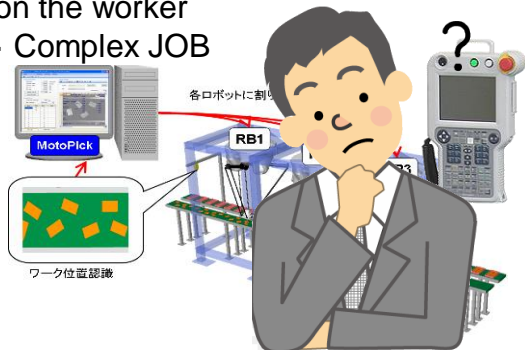
It is not able to support it, to spillage of upstream

- The lower robot can not carry spillage of upstream.



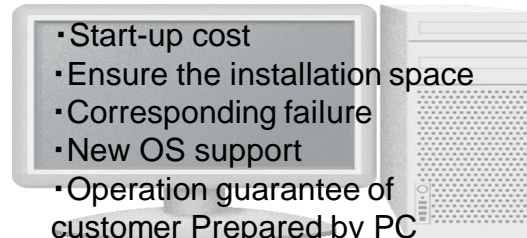
Setting is difficult

- And precision / efficiency depends on the worker
- Complex JOB



The constraints imposed by PC software

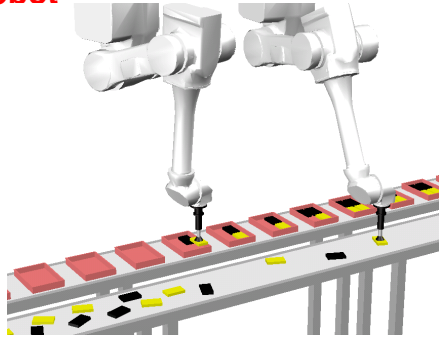
- Start-up cost
- Ensure the installation space
- Corresponding failure
- New OS support
- Operation guarantee of customer Prepared by PC



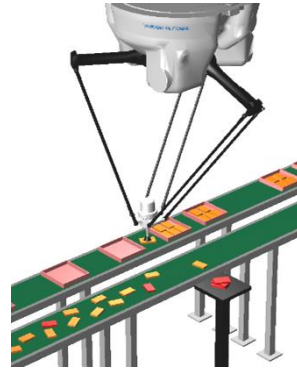
New MotoPick 3.Flexible

The adaptation to the various lines

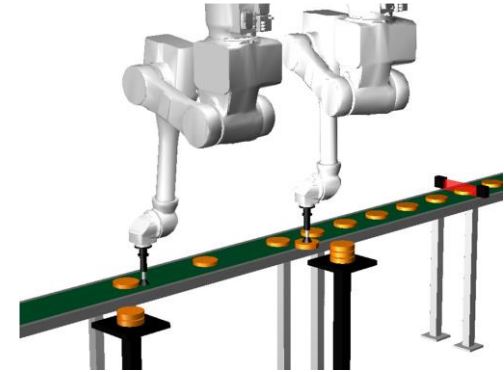
○Multi-product mixed / multiple robot



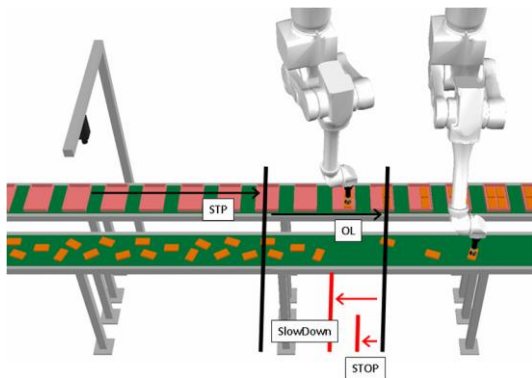
○NG judgment of work



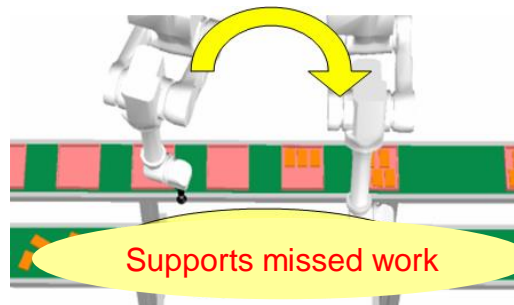
○Vision-less / non-conveyor (side take)



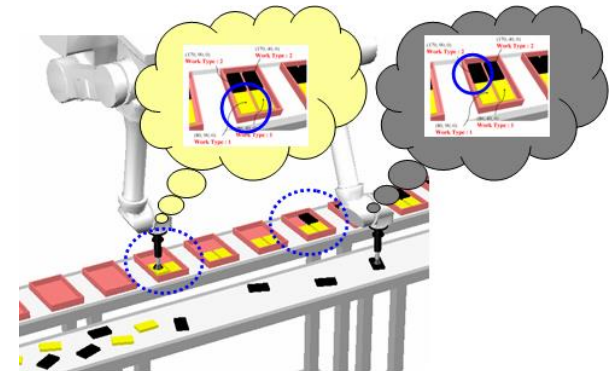
○Conveyor speed control / stop



○Supports missed work



○Prevent spilling work place

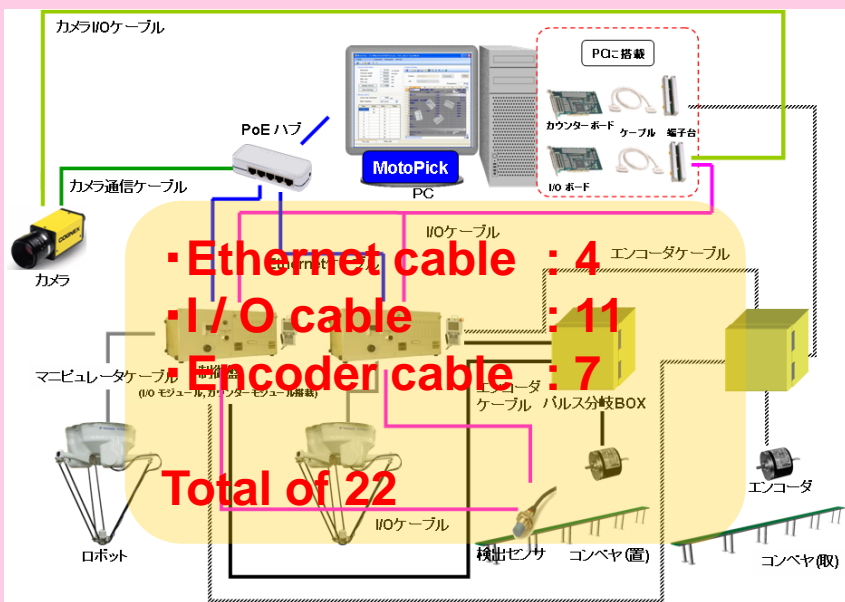


New MotoPick 4-1.Easy to Use

Reduced wiring (PC-less)

Cable **1/2** or less!!

(Conventional)



■ per robot one additional

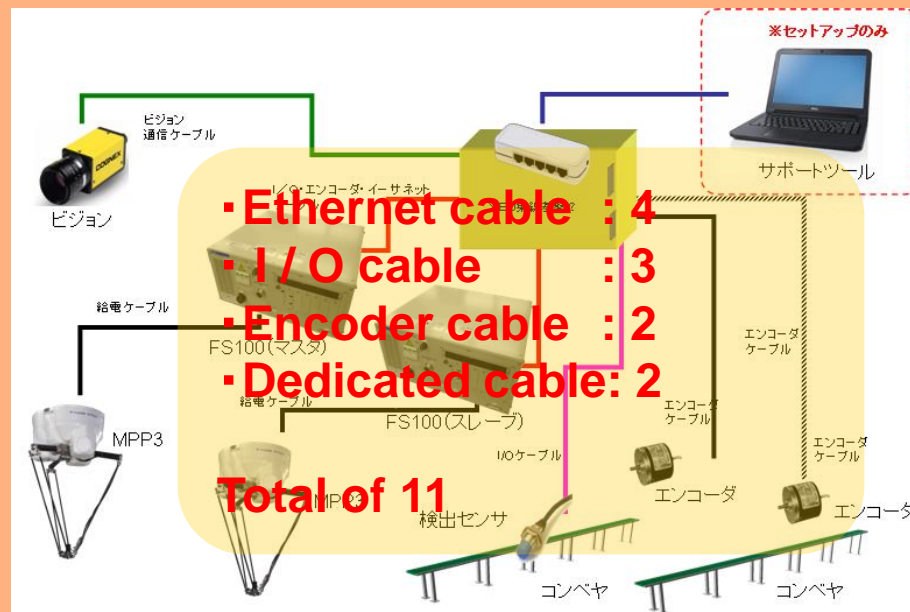
Ethernet cable : +1

I / O cable : +4

Encoder cable : +2

Total +7

(MotoPick)



■ per robot one additional

Ethernet cable : +1

I / O cable : +1

Encoder cable : +1

Total +3

New MotoPick 4-2.Easy to Use

Support tool

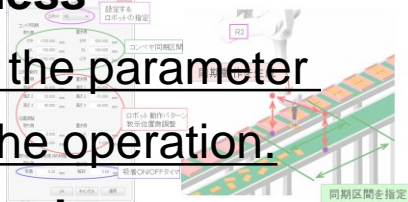
Reinforced **user interface!**

Roles

■ Supporting the setup

▪ Teaching-less

→ Inputting the parameter creates the operation.



▪ Setup wizard

→ The setting is supported dialogically.



▪ Online adjustment

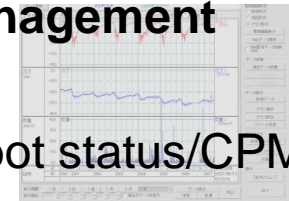
→ Operation is adjusted while the system is running.



■ Monitoring

▪ Production management information

Displays the robot status/CPM.



▪ Error recording

Displays the communication (time-out)/exception.



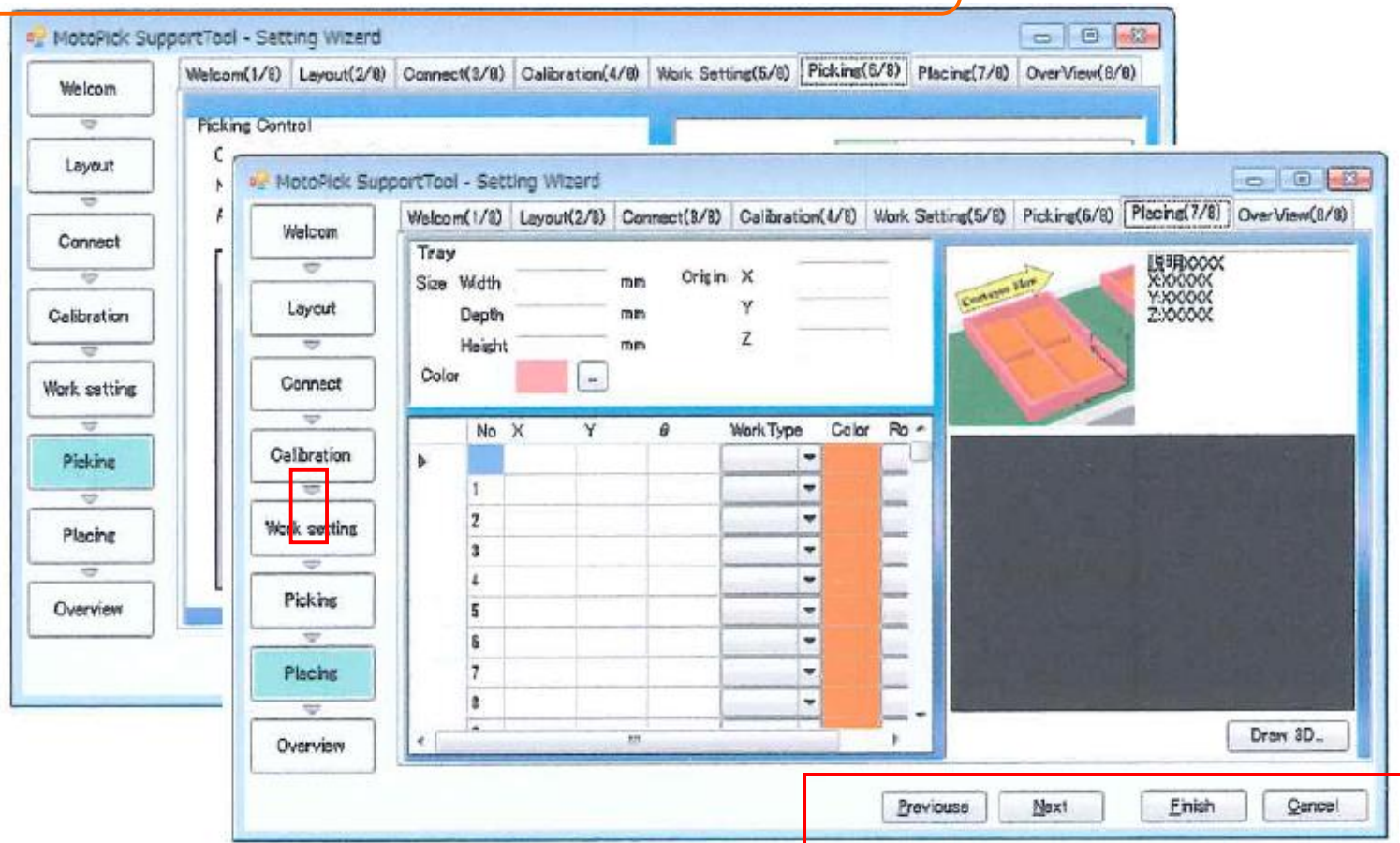
▪ Log recording

Displays the progress status of processing.

Time	Station	Count	Unit	Time	Unit	Time	Unit	Time	Unit
10:28	JAZGRP	59	18P	50	CW	2	18		
10:28	JAZGRP	59	18P	50	SSB	2			
10:28	JAZGRP	59	18P	50	AM	0			-DUPE-

New MotoPick 4-3.Easy to Use

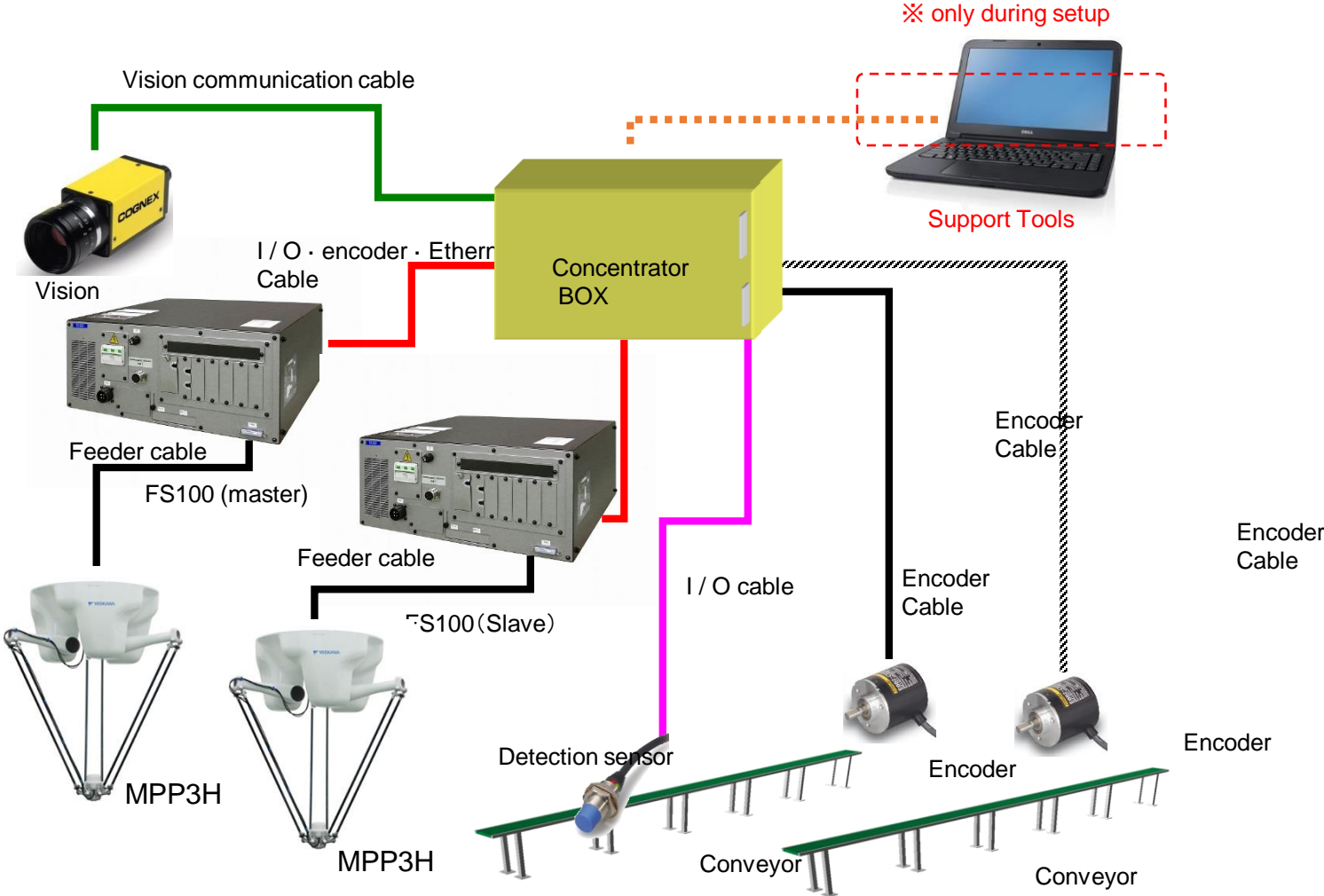
Support for setting up a wizard



Setting Flow

Screen button operation

New MotoPick 4. System configuration



Picking robot MOTOMAN- MPP3H/MPP3S

Higher productivity

To improve the production rate of transport fastest class, operating range of up to, in the high-density arrangement through the establishment of minimum space.

- 3 kg Nomadic: 150CPM, 1 kg Nomadic: 230CPM
 - wrist axis tolerable moment of inertia: 0.017 kg m²
- Can be conveyed at high speed using a double hand.

Wide operating range in a small space

- operating range of 3 kg Nomadic class maximum
MPP3H: $\phi 1300 \times H300$ mm
MPP3S: $\phi 800 \times H200$ mm
- footprint of 3 kg Nomadic class minimum
MPP3S: $\phi 750$ mm
MPP3S: $\phi 650$ mm



Cleanliness

It is a structure hygienic considering the food transport.

- adopted a self-lubricating resin Japanese Food Sanitation Law authentication Grace-less of the ball joint by Realization.
- Easy cleaning a smooth body surface with the exception of the arm
- I adopt a food machinery grease for an H1 authentication U.S. NSF
- clean class, corresponding to ISO Class 5
- IPA cleanliness certified



MOTOMAN-MPP3S



MOTOMAN-MPP3H

Picking robot MOTOMAN-**MPK2F**

Higher productivity

Allows 24 hours of continuous operation with a high degree of accuracy

- Faster alignment work
 - Can be aligned at the same time work with the transport
 - The speed to $2000^{\circ} / s$ maximum speed rotation of the wrist (T-axis)

Free installation

- Can be installed in all directions

Wiring, simplification of piping work

- Hose and cable is not exposed
Hollow arm structure
(The built-in wiring, piping)

Cleanliness

It is a structure hygienic considering the food transport.

- measures dust and rust
 - Apply the anti-rust material, external exposure member conducted surface treatment, anti-wash painting
- I adopt a food machinery grease for an H1 authentication U.S. NSF
- clean class, corresponding to ISO Class 6

