

[Proposals to address issues]

Support for Various PCBs and Production Forms

Panasonic Connect Corporation
Circuit Formation Process Division



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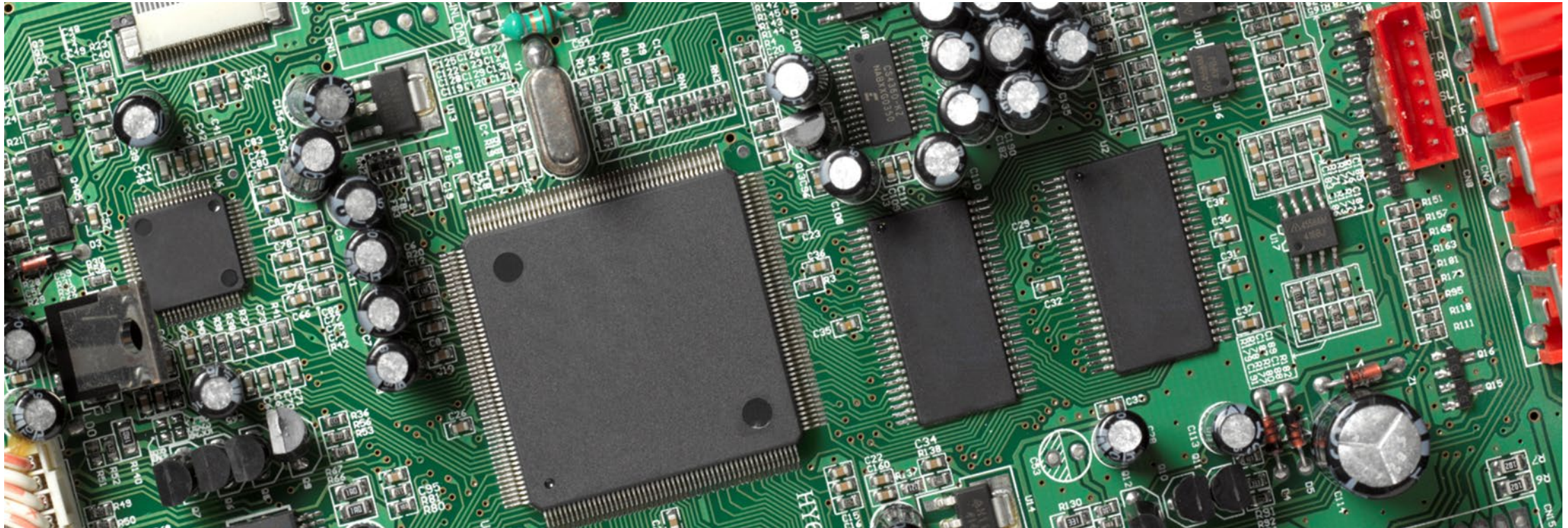
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Various PCBs and Production Forms

As PCBs become more diverse, each industry demands a variety of component mounting needs, such as thin and large PCBs, and small component and high-density mounting.

Panasonic offers solutions that support various PCBs, as well as solutions that achieve high quality and productivity.



Solutions by Panasonic

System Software

Need to ensure print quality by stabilizing solder position and volume

APC system
(APC-FB)

Need to ensure mounting quality by reducing the influence of printing and mounting misalignment

APC system
(APC-FF, APC-MFB2)

Need to create the production plan of the mounting floor accurately and efficiently without skill

MFO

Printer system

Need to print properly on warped PCB

Top /
Side Clamper

Need to print stably even when printing is difficult due to fine apertures

Compatible with hybrid suction

Mounter system

Need to be compatible with long PCB

Single conveyor
Long PCB
(1 500 mm) specifications

Need to improve mounting quality by aligning PCB height (warp)

Height sensor

Need to respond the number of components flexibly

General-purpose cell line

Need to be compatible with high-density mass production and wide variety of products

NPM-GH/GW
hybrid line

Need to ensure print quality by stabilizing solder position and volume

APC System (APC-FB)

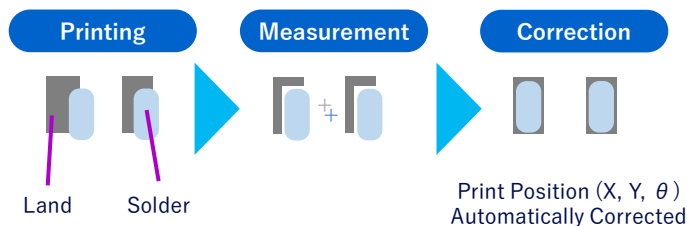
This function statistically processes the solder measurement results from the solder inspection device(SPI) and sends feedback to the printer to automatically stabilize print quality by controlling the position and volume of solder.

APC-FB (position)

Maintains print quality by feedback control of solder printing position

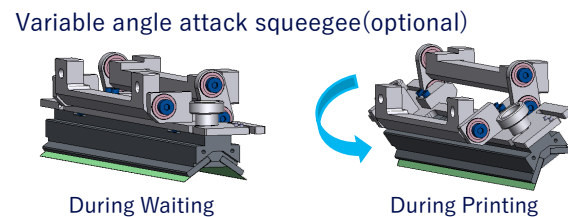


Mounting position aligned based on SPI print locations/results

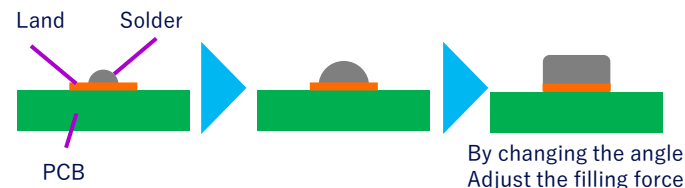


APC-FB (volume)

Volume is automatically corrected by using 3D solder inspection equipment and variable angle squeegee



Automatically adjusted squeegee angle based on volume measurement result



Merit

Stable print quality is achieved by automatically correcting the print position based on the print misalignment information from SPI.

High quality printing is maintained by early correcting the print misalignment caused by material factors such as PCBs and changeover.

Optimum solder volume is maintained by automatically adjusting the filling force by changing the angle of attack squeegee based on the volume information from SPI.

Please contact our company for products compatible with each function.

Need to ensure mounting quality by reducing the influence of printing and mounting misalignment

APC System (APC-FF/APC-MFB2)

The placement position is corrected in cooperation with other companies' inspection equipment to maintain mounting quality for printing and mounting displacement caused by PCB expansion and contraction.

APC-FF

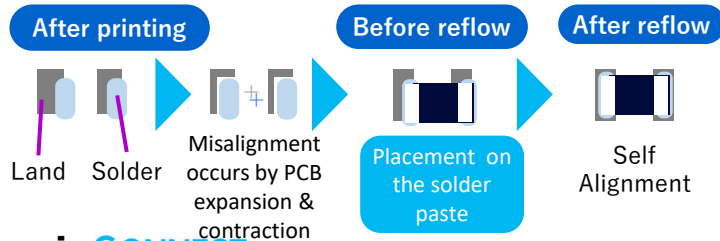
Quality after reflow is maintained by controlling variation in solder printing position

APC-MFB2

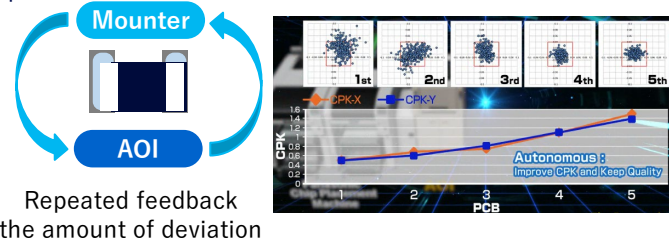
Elimination of deterioration in accuracy with time by controlling variation in mounting position



APC-FF: Mounting position correction based on SPI printing deviation information



APC-MFB2: Mounting position correction based on AOI inspection deviation information



Merit

APC-FF

Components are installed at the optimum position based on the SPI solder measurement position, and high-quality placement is achieved by effectively utilizing the self-alignment effect.

APC-MFB2

Components are installed by correcting misalignment based on AOI measurement results, and stable mounting quality is achieved by automatically correcting equipment fluctuation.

By using APC-FF and MFB2 together (APC-MFB correction is applied based on the component mounting coordinates corrected by APC-FF), further high-quality mounting is realized.

Please contact our company for products compatible with each function.

Need to ensure mounting quality by reducing the influence of printing and mounting misalignment

Manufacturing Operation Optimizer MFO

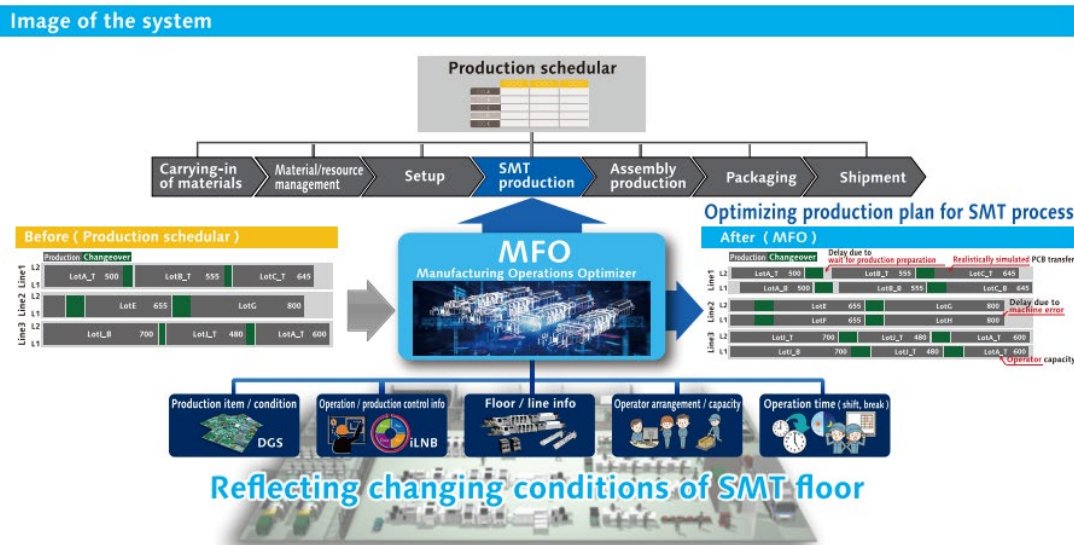
Resource information such as production conditions, number of workers, and multiple line configurations, as well as production performance information, are reflected in the production plan created by the production scheduler. Automatically generates production planning and implementation programs with less changeover and high production efficiency.

Merit

In cooperation with DGS (Data Generation System), a highly accurate production execution plan can be drawn up without repeating the adjustment work of production plan and production data.

Production allocation to multiple lines and optimization of changeover can be performed.

The entire implementation site can be simulated with high accuracy, enabling verification of resource input and allocation.



Please contact our company for products compatible with each function.

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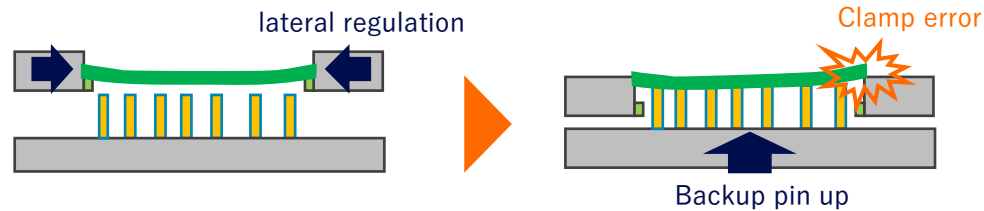
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Need to print properly on warped PCB

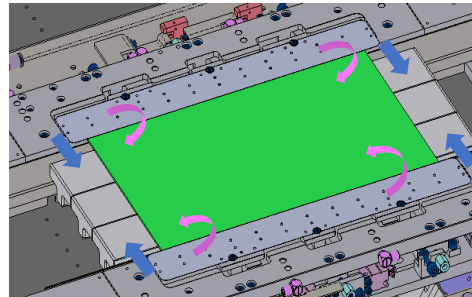
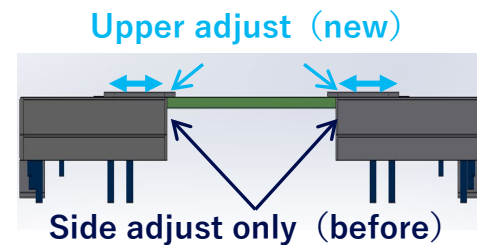
Top/Side Clamper

In addition to the conventional side clamber, a top clamber is adopted to hold the PCB from the top. This strengthens the solution to PCB warpage and further improves print quality.

Side clamp



Side + top clamp



Merit

Corrects PCB warpage and improves printing quality by pressing from the top of the PCB.

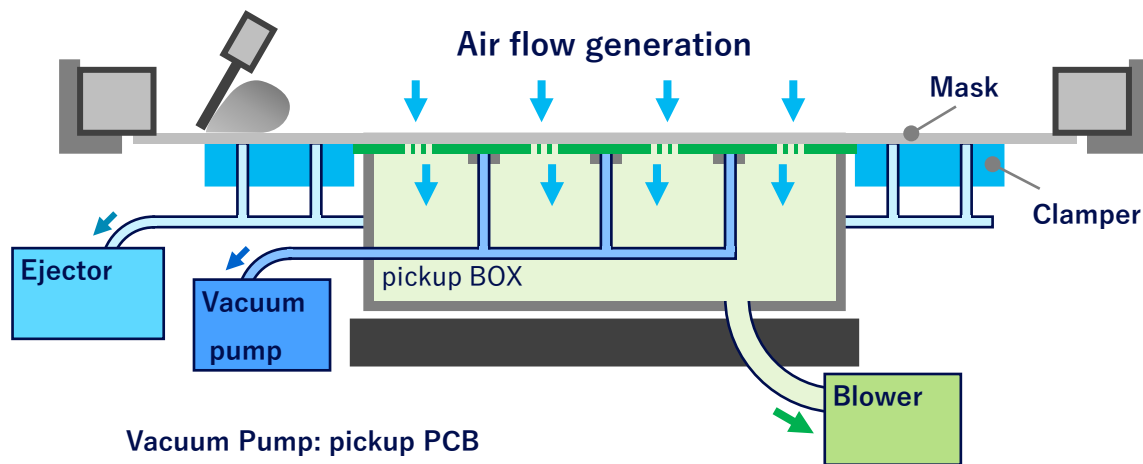
Prevents the PCB from sticking to the mask after printing.

Please contact our company for products compatible with each function.

Need to print stably even when printing is difficult due to fine apertures

Compatible with hybrid suction

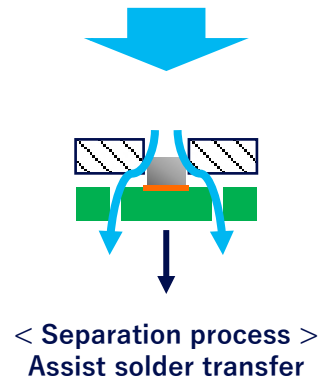
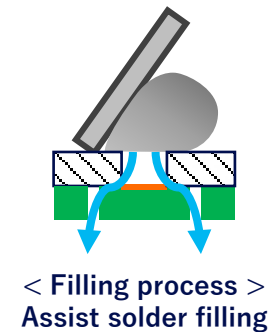
Solder printing is stabilized by pickup the mask through clumper with the ejector, pickup PCB with a vacuum pump, and sucking the solder through the PCB with a blower.



Vacuum Pump: pickup PCB

Ejector: Mask to pickup

Blower motor: suction solder through PCB



Merit

Prevent masks from slipping by mask suction

The blower generates air flow from the upper surface to the lower surface of the mask to assist solder filling

The clumper is fixed while holding the mask, and only the PCB is lowered, so that the entire PCB is uniformly separated

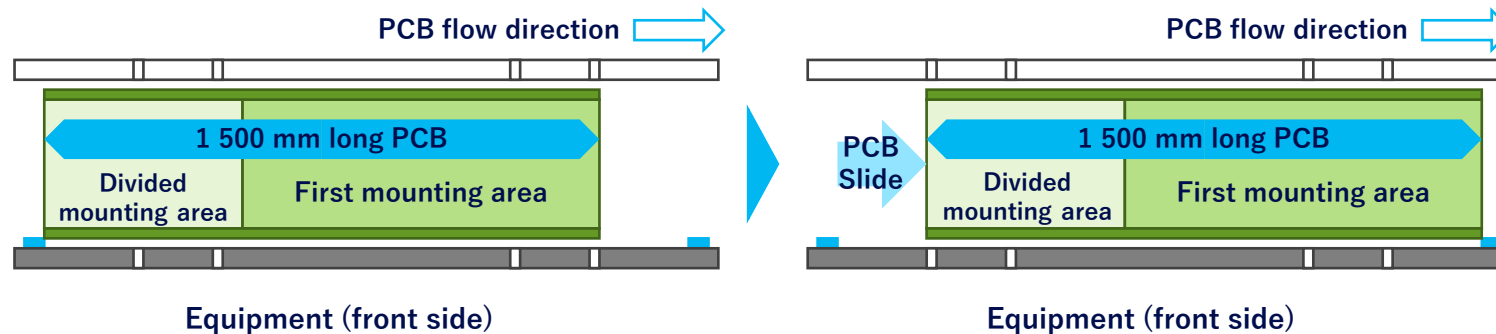
Please contact our company for products compatible with each function.

Need to be compatible with long PCB

Single conveyor long substrate (1 500 mm) specifications

By mounting the long PCB in two slides, the maximum length of the PCB in the longitudinal direction can be increased to 1 500 mm *1.

*1 The figure below shows the case of AM100. Please contact your sales representative for supported models.



Examples of supported PCB sizes *2: L 50 mm × W 50 mm ~ L 1 500 mm × W 460 mm

Examples of mountable range *2: L 50 mm × W 41 mm ~ L 1 500 mm × W 451 mm

*2 Please contact your sales representative for supported models and 1 500 mm or more.

Merit

Supports long PCB for Switches, routers, and automotive CCS (Cell Connection System)

Stepwise support for each PCB length

Supports slide mounting (split mounting)

Please contact our company for products compatible with each function.

Need to improve mounting quality by aligning PCB height (warp)

Height sensor

The entire PCB height (warpage) can be measured, the mounting height can be corrected, and placement can be performed. If the measurement result exceeds the allowable value, a warning is issued before starting placement.

Measurement points:

9 points or more, maximum 25 points/sheet

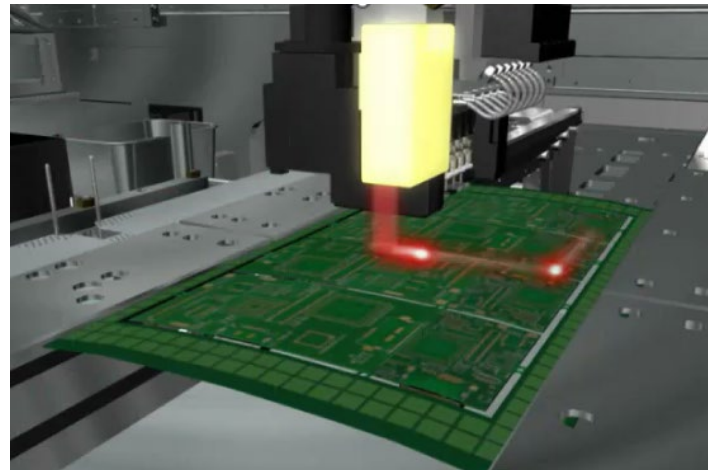
Amount of substrate warp:

Upper warp 2 mm or less,

Lower warp 2 mm or less

and the warping gradient is 0.5% or less

and height difference 1 mm or less of
the ridge line (carrying direction)



Merit

Placement following the PCB warpage is possible.

Preventing the occurrence of quality defects with a warning before starting placement

Need to respond the number of components flexibly

General-purpose cell line

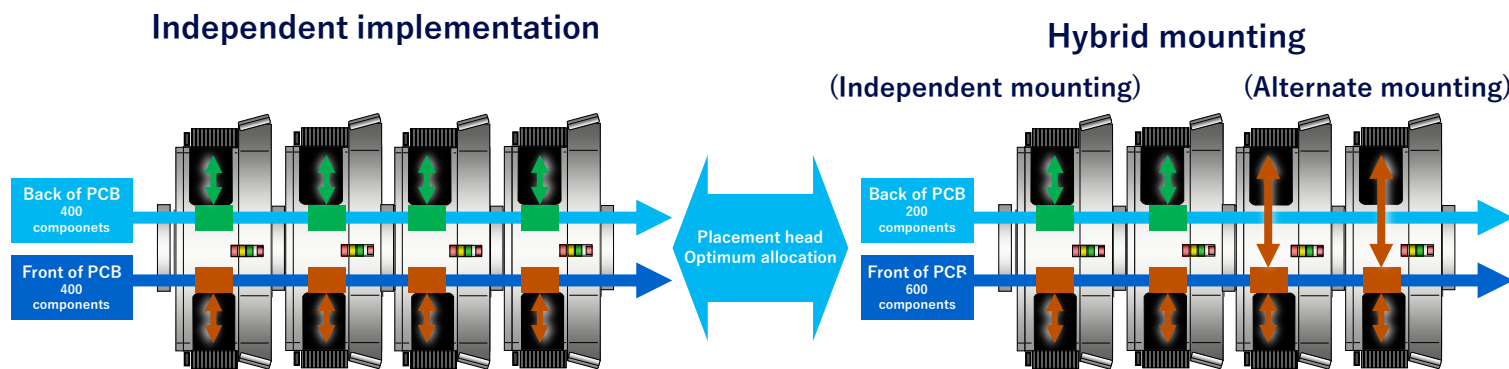
This line eliminates balance loss in the production of multiple models with different placement points on the front and back of the PCB, and achieves high-efficiency operation. For example, utilizing dual lanes, balance loss is eliminated by optimal allocation of the number of heads even when there is a difference in the number of placement points on the front and back of a mixed flow line.

Merit

High efficiency/high balance

Optimal allocation of the number of heads according to the number of parts

Flexible response to differences in the number of parts on the front and back sides



Please contact our company for products compatible with each function.

Need to be compatible with high-density mass production and wide variety of products

NPM-GH/GW hybrid line

This is a multi-product mass production line that flexibly supports mass production of micro components and high-density PCB, as well as medium- and small-lot production. Combining the high-precision and high-productivity of NPM-GH with the versatility and number of placement components of NPM-GW, it achieves efficient production with reduced changeover.

NPM-GH



Maintains the fastest production at all times
Supports micro components and high-density placement



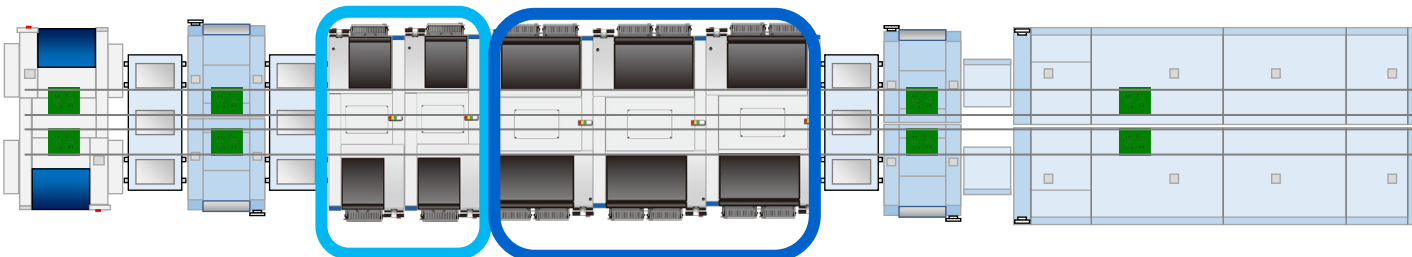
NPM-GW



Tact time is leveled to cope with variations in the ratio
of placement points of various PCBs

NPM-GH

NPM-GW



Merit

Flexible production of high-mix low-volume and low-mix high-volume

Tact time is leveled to cope with variations in the ratio of placement points of various PCBs

Please contact our company for products compatible with each function.

Related Contents

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Please also refer to our website for product information.

Product website

The background is a dark blue field filled with a pattern of lighter blue geometric shapes, including squares and semi-circles, some of which are partially cut off by the edges of the frame.

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