



Panasonic's manufacturing operations optimizer automatically draws up production plans to reduce man-hours and enhancing production efficiency.

## Manufacturing operations optimizer (MFO)

Features The Manufacturing Operations Optimiser (MFO) is a newly developed product for drawing up production plans required for on-site operations to reduce the man-hours needed for the production plan and, at the same time, to enhance production efficiency. MFO creates detailed schedules for productions and pre-set-up operations and calculates the required resources for production by simulating the manufacturing process of the entire SMT production floor. By simulating the planned production, the MFO answers questions about estimated production completion, indicates which production sequence is to be used for higher efficiency, proposes optimal machine set-up for higher efficiency, and indicates the number of staff needed to achieve the plan. MFO models the

### Key Features

- Drawing up production plans required for on-site operations
- Detailed schedules for productions and pre-set-up operations
- Calculates the required resources for production by simulating the manufacturing process

system to create detailed production schedules including pre-set-up operations. Those production plans are mandatory to optimize manufacturing processes and thus improves cycle times and production efficiency. It also calculates the number of operators required by simulating the entire SMT manufacturing operation. Image of the system MFO provides clear and easy to understand plans for production, process set-up and operator management plus simulation reports. Beside this, it provides various optimization function, like mounting process, production plan, production-set-up plan and operator count, including a table of function list and machines.

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<https://ap.connect.panasonic.com/p/h/en/products/smart-factory/manufacturing-operations-optimizer-mfo>

<b>Mounting process simulation</b>	In consideration of "error occurrence in production machines," "parts exchange by operators" and "operators' travel time," it models a mounting floor, and simulates production conditions including multiple mounting lines and off-line setup processes. This ensures highly accurate simulation results.
<b>[Optimization function] Production plan optimization</b>	In consideration of multiple production lines, it optimizes a production plan based on the production conditions set up in [mounting process simulation]. This allows the "production line" and "production order" of each PCB to be calculated / provided automatically.
<b>[Optimization function] Setup plan optimization</b>	It optimizes "off-line setup" sequence according to the production plan developed in [production plan optimization].  This allows automatic calculation / provision of "priorities for setups in multiple lines," "a setup plan that takes into account the shared use of carts" and "effects of an increase / decrease in the setup number of operators on the production plan."
	*The optimization function of "In-line setup" is currently under development.
<b>[Optimization function] number of operators optimization</b>	Based on the production conditions set up in [Mounting process simulation], it optimizes the number of operators required for each line and setup, allowing you to automatically calculate / provide "the number of the operators required."
<b>Applicable machine NPM-X/NPM/AM series</b>	NPM-DX, NPM, NPM-D/D2/D3, NPM-TT/TT2, NPM-W/W2/W2S, AM100
<b>Applicable machine CM/DT series</b>	CM602-L, CM232-M/212-M, CM101-D, CM402-L/M, CM401-L/M, DT401-F/M
<b>Applicable machine Screen Printer</b>	SP60/70/80/18, SPG/SPD/SPV
<b>Applicable machine NPM-VF series</b>	NPM-VF
<b>Applicable machine Panasonic's former machine</b>	Machines not included in the ones mentioned above
<b>Applicable machine Competitor's machine</b>	Competitors' machines (loader, screen printer, SPI, placement machine, AOI, reflow, etc.)