

MPM

Electronic Assembly Equipment

TW EAE

MPM[®] Electronic Assembly Printers

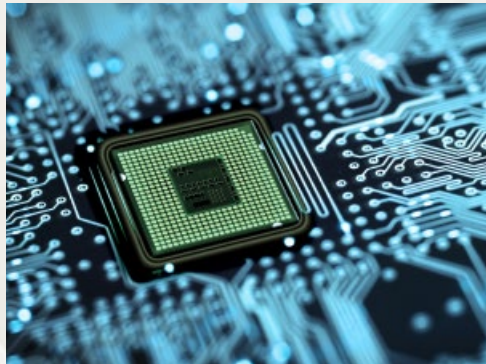
Proven high-performance printing in a flexible and easy to use platform.

Semiconductor



Designed to meet the demand for increasing throughput, yield and performance requirements from automotive, smart device and semiconductor manufacturers.

Automotive, Smart Device



MPM Electronic Assembly Printers

Today's MPM® printers are engineered and built to the highest standards. They are built on a solid foundation of proven technology and incorporate the most successful ideas and systems from prior MPM printer models. From new print head technology to vision system development, today's leading MPM family of printers are ready to meet the most exacting manufacturing challenges.



MPM is leading the way with integration technology that will enable the automated and connected factories of the future.

Industry 4.0



Built on a Solid Foundation

Strength and stability are prerequisites for accuracy and precision when system parts are in motion and moving about at high speed. MPM's major assemblies are driven by precision ball screws, not belts, which eliminates the need for calibrations.

MPM's rigid frame is welded for low vibrations. This allows for higher repeatability and great reliability over time. Board alignment is achieved with minimum table motion; thus the PCB travels to the stencil more quickly.

Industry 4.0 integration

MPM printers supports industry standards like CamX, SECS-GEM and SMEMA. Using OpenApps we can provide support for factory automation standards such as Hermes and Pulse and communication with Manufacturing Execution Systems (MES).

Edison™

The MPM® Edison™ is ideally suited for the burgeoning semiconductor, automotive and smart device manufacturing markets. It is the industries' most accurate printer with ± 15 microns @ 6 sigma wet print repeatability. Total throughput is lightning fast due in part to the highly-efficient, patented parallel processing of the stencil shuttle system, stencil wiping, paste dispensing and vision alignment system.

Fastest

Most Accurate



Momentum® II Elite

The MPM® Momentum® II Elite is the top-performer of the Momentum series, boasting the highest throughput and shortest cycle times of all. Its vision system is driven by servos for speed, and it's configured with a highly-efficient triple track rail system featuring an input buffer, a central processing section, and an output buffer.

Momentum® II HiE

The MPM® Momentum® II HiE is a single-rail printer with servo motors, rather than stepper motors, driving the vision systems x, y and z-axes at higher speed and thus increasing throughput and cutting cycle time.

High Performance

Momentum® II BTB

The MPM® Momentum® II BTB is a Back to Back configurable Momentum printer. BTB configurability allows dual lane processing for higher throughput, but without increasing line length or capital investment. It's the ultimate in flexibility in the proven Momentum platform.

Momentum® II 100

The Momentum® II 100 is a hard-working, value-priced printer utilizing the robust, reliable Momentum series platform that has been proven to be at the top of its class in facilities around the world. Featuring a modest footprint, it grows with the user; innovative patented features can be added on or retrofitted as needed as throughput and capability demands grow.



Production Value

MPM Edison Printer

The most accurate printer in the market, with advanced technology needed for fine pitch applications.

Unmatched Accuracy and Speed

The Edison is the most accurate printer in the market. Edison has built-in ± 8 microns alignment, and ± 15 microns wet print repeatability (≥ 2 Cpk @ 6 sigma) proven through CeTaq Print Capability Analysis (PCA) testing.

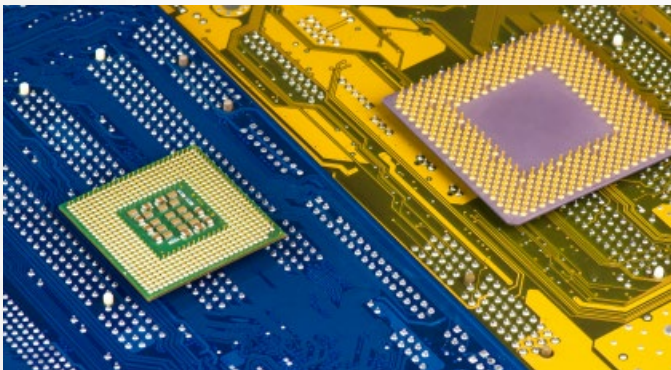
The Edison has a total throughput that is much faster than current leading printers due in part to the highly-efficient parallel processing of the stencil shuttle system, stencil wiping, and vision alignment system.

This incredibly fast cycle time leaves room for extra steps that improve the quality of critical electronics. Slower stencil separation for optimal print definition, more frequent wiping and a double print stroke after wiping all lead to improved quality and yield.

Ultra-fine pitch and aperture printing

Component miniaturization, particularly in the smart device market imposes technical challenges for printing equipment. The MPM Edison meets these challenges with a 25% improvement in wet print accuracy over current best-in-class printers.

Edison is optimized for ultra-fine pitch (0201M) printing with a transfer efficiency up to 75% for small apertures. Single axis closed-loop pressure control for the dual squeegee eliminates front-to-back variation and maintains the set pressure across the entire board surface.



Back To Back (BTB) Configurable

Ultra-fast, High Efficiency Wiping

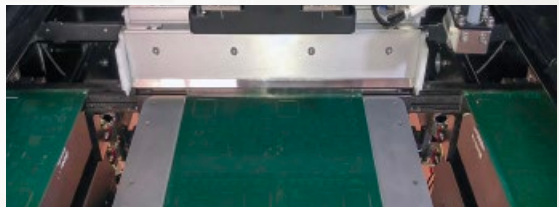
A super-size 65m paper roll with patented constant tension control, makes 10,000 prints possible before a roll change is needed, reducing downtime and operator interface. Wiping zone is isolated from printing zone to avoid cross contamination.

Best Performance Closed-loop Squeegee

A single high precision load cell with closed-loop pressure control and motor drive system enable precise and consistent squeegee force control across print stroke in both directions, which helps improve yields especially for challenging thin substrate printing in the semiconductor industry.

NEW Board Staging

The ability to have three boards in the machine simultaneously. Pre-loading the board during the print process results in reduced transfer times and improved cycle time.



A proven, highly-productive printer platform with a new set of enhanced technologies.

Proven, Robust

Flexibility to meet growing demands

Momentum II is designed and built to be a no-nonsense production machine. Cost-efficient and featuring a modest footprint, it grows with the user; innovative patented features can be added on or retrofitted as needed as the user's throughput demands grow.

Momentum's alignment repeatability is ± 12.5 microns @ 6 sigma, $Cpk \geq 2$. Wet print accuracy is ± 20 microns @ 6 sigma, $Cpk \geq 2$. Tighter performance tolerances mean higher repeatability with fewer defects.

The Momentum II series is designed with production needs and the needs of the operator in mind. They're champion performers, meeting the demands of high throughput and accuracy, yet at the same time are easy to learn, easy to use, and offer user-friendly features including built-in wizards in the Benchmark software program that provide direction for all machine functions, utilities, and error recovery.

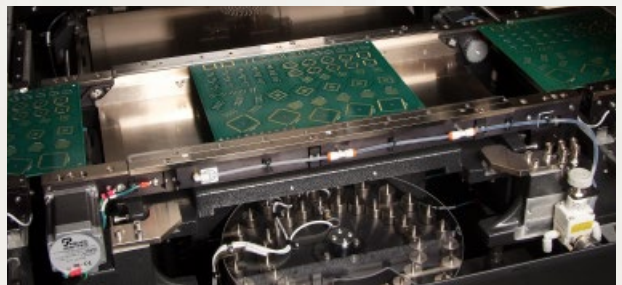
Momentum® II New Features

- ◆ Newly designed cover set with larger window and wider access inside the printer
- ◆ Solder paste roll height monitor for both upper and lower limits and out of range alert
- ◆ Solder paste temperature monitor measures on stencil and cartridge and has out of range alert
- ◆ Quick release squeegee for faster changeover
- ◆ Upgraded Benchmark GUI with new production tools and easy to use Quickstart program
- ◆ Support pin placement and verification with bottom-side image alignment
- ◆ New jar paste dispenser for increased productivity
- ◆ Adjustable stencil shelf
- ◆ EdgeLoc+ edge and top board clamping



Momentum® II Elite's Triple-Track Processing Speed and Efficiency

The Momentum II Elite is the only MPM printer with triple-track. All other MPM printers feature a single rail. With triple track, cycle time is shortened because boards don't have to move single-file through the printer. A new board can be indexed into the machine and positioned next to the center nest, readying to print, while the two others are being loaded and offloaded. Instead of one-board-at-a-time linear processing, cycle time can be shaved by buffering PCBs inside the machine.



NEW Automated Support-Pin Placement

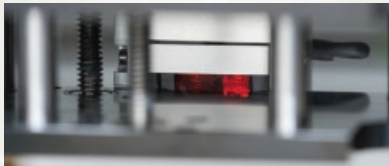
The Elite and HiE offers MPM's patented tooling solution automatically places support pins in a software programmable pattern simplifying both initial set-up and product changeover. The newly developed feature allows pin location to be easily identified and verified with a bottom side image whether placing pins automatically or manually.

High Performance

MPM Features and Enhanced Technology

NEW Paste Height Monitor

The Paste Height Monitoring system is designed to prevent defects caused by inadequate volumes of paste on the stencil. It combines advanced software and sensor technology to accurately monitor the paste bead for volume consistency. Upper and lower limit roll-height monitoring eliminates insufficient or excess paste volumes. It's a non-contact solution that can automatically add more paste to the stencil as it is needed.



NEW Paste Temperature Monitor

Patent-pending temperature monitoring ensures proper paste viscosity to avoid bridging and voiding. MPM paste temperature monitor allows paste to be measured in the cartridge and/or on the stencil.

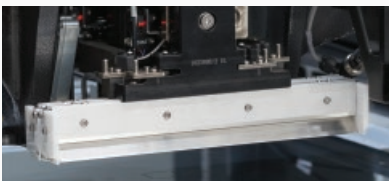
NEW Automatic Paste Dispensing System

Dispense for standard cartridges or choose the new jar dispenser. Paste is released in precise, measured amounts across the stencil in a clean, uniform bead. Deposition volumes, frequency, and placement are user-programmable.



NEW Quick Release Squeegee

New quick release squeegee blades make changing blades quick and easy with no tools required. It takes less than 30 seconds to change the blade.



NEW Adjustable Stencil Shelf

Provides the flexibility to handle all stencil sizes with a simple adjustment of the shelf. The robust design provides better stability on all stencil sizes.

NEW EdgeLoc Board Clamping

The EdgeLoc system uses a side snugging technique that removes the need for top clamps which interfere with the PCB to stencil contact. The result is optimal gasketing and more volumetrically consistent edge-to-edge prints. With EdgeLoc II, robust flippers engage to secure the board across the top edge ensuring board flatness then move out of the way once the board is firmly gripped from the side. EdgeLoc+ board clamping is able to change between edge and top clamping simply through software.

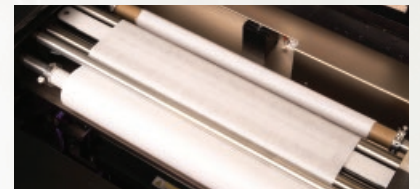


EnclosedFlow Printhead

EnclosedFlow ensures optimal aperture filling for fine pitch devices and through-hole applications with crisp uniform printing and less waste. Solder paste is held within an enclosed chamber and is directly mechanically pressurized during the print stroke.

RapidClean

RapidClean is a high-speed stencil solvent cleaning innovation that slashes cycle time and improves stencil cleaning performance, especially for fine-pitch. RapidClean reduces 3 wipe strokes to 2 and cuts cycle time by 5 – 6 seconds per print cycle over the standard wiper. And because fewer cleaning cycles are required, RapidClean can save up to \$10K USD per annum in paper savings per printer.



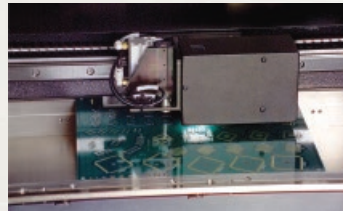
Camalot Inside™

Improve your production line's flexibility and productivity with Camalot patented dispensing technology inside the Momentum II Elite and HiE. Includes dual dispensing heads mounted to the wiper gantry.



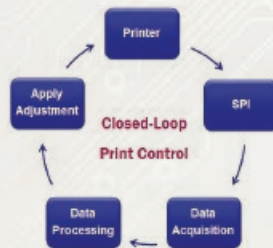
MPM Vision System & Inspection

MPM's printer-based Vision and Inspection system is a cost-effective way to verify print and paste deposit results. It's flexible enough to handle the complete range of today's most challenging components. This system measures the amount of paste covering the target pad and compares it with the required coverage. 2D Inspection is integrated directly into the stencil printer to provide an immediate source of data.



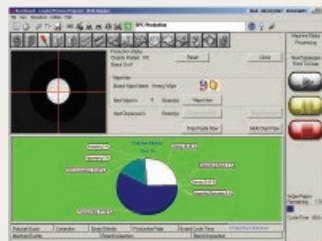
SPI Print Optimizer

SPI Print Optimizer brings your Solder Paste Inspection (SPI) machine into communication with your MPM printer through a specially-developed common interface. When the SPI machine 'sees' X, Y and theta offset problems on a just-printed PCB, it analyzes the data virtually instantly and gives the printer instructions to correct those offsets, automatically, and 'on the fly'.



BridgeVision and StencilVision

BridgeVision is a patented method of analyzing bridge defects on circuit boards in the post-print inspection process. This innovative system utilizes texture-based image acquisition algorithms and a digital camera system with telecentric lenses to support the accurate identification of paste deposit defects. StencilVision utilizes texture-based technology to check the underside of a stencil for solder paste contamination. Wiper operation can be driven by the results obtained.

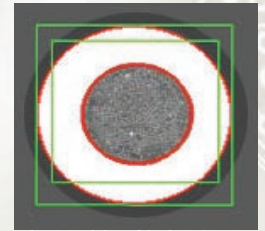


Best Performance Closed-loop Squeegee

An advanced print head features a single high precision load cell with closed-loop pressure control and motor drive system enabling precise and consistent squeegee force control across print stroke in both directions, which helps improve yields especially for challenging thin substrate printing.

AccuCheck Print Capability Verification

Accucheck Print Capability Verification allows the printer to measure its own print capability. Users can verify the machine's capability at any time or continuously on their own products. AccuCheck measures the actual print deposit position versus the target pad to determine a measured print offset. It is an inexpensive, reliable method of obtaining machine quality and process capability information to ensure repeatable results and optimum printing performance.



Updated Benchmark™ User Interface

Easy to learn and use for the average operator, MPM's Benchmark software is powerful yet intuitive, and facilitates rapid setup, assists with operational tasks, and makes changeover quick and easy. The software has been upgraded with new production tools and new Quickstart programming to make it even easier to use.



OpenApps™

MPM's OpenApps is an open architecture source code which provides the capability of developing custom interfaces in support of Industry 4.0 initiatives and communication with Manufacturing Execution Systems (MES). ITW EAE is the first SMT company to offer open software architecture.

PrinTrack™

PrinTrack™ adds traceability, data harvesting, and reporting to your printing process. It can seamlessly integrate with other equipment and elements in the manufacturing cycle, such as MES and ERP, and can be expanded factory-wide.

Machine Specifications			EDISON		MOMENTUM II		MOMENTUM II BTB/BTB HiE	MOMENTUM II 100
			300	200	Elite	HiE		
Performance	Accuracy & Repetability @ 6 sigma, Cpk ≥2.0 *	Alignment	±8 microns (±0.0003")		±12.5 microns (±0.0005")		±12.5 microns (±0.0005")	±12.5 microns (±0.0005")
		Print	±15 microns (±0.0006")		±20 microns (±0.0008")		±20 microns (±0.0008")	±20 microns (±0.0008")
	Cycle Time (core)		15 seconds (include print & wipe)**	20 seconds (include print & wipe)**	6.0 seconds	7.5 seconds	7.5 seconds (BTB HiE) 9 seconds (BTB)	11 seconds
Configuration	Max Print Area		450 mm x 350 mm (17.72" x 13.78")		609.6 mm x 508 mm (24" x 20")		609.6 mm x 508 mm (24" x 20")	609.6 mm x 508 mm (24" x 20")
	Back to Back capability		Yes		No		Yes	Yes
	Printer Dimensions	Width	1280 mm (50.40")		1675.5 mm (66.0")	1203.0mm (47.4")	1196.0 mm (47.09")	1196.0 mm (47.09")
		Depth	1440 mm (56.70")		1592.0 mm (62.7")		1423.5 mm (56.04")	1423.5 mm (56.04")
		Height	1589 mm (62.55")		1526.0 mm (60.0")		1494.10 mm (58.82")	1494.10 mm (58.82")
Features/ Options & Customer Benefits	Productivity & Throughput Improvement	Quik-Tool	O		O		O	O
		Auto-Tooling			O			
		Triple Track/board staging	O		S			
		Automatic Paste Dispenser (jar or cartridge)	O (cartridge only)		O		O	O
		Quick Release Squeegee	S		S		S	S
		RapidClean			O		O	O
	Quality & Yield Improvement	Closed-loop Squeegee	S		O		O	O
		EnclosedFlow Printhead			O		O	
		Paste Height Monitoring (upper & lower limit)	O		O		O	O
		Paste Temp Monitoring	O		O		O	O
		SPI Print Optimizer	O		O		O	O
		2D Inspection			O		O	O
		Stencil Vision			O		O	O
	RapidView			O				
	Flexibility	EdgeLoc+ Board Clamping	O		O		O	
		EdgeLoc II Board Clamping	S		O		O	
		Fixed Top Clamps			S		S	S
		Camalot Inside Built-in Dispenser			O			
		Adjustable Stencil Shelf	S		S		O	O
	Industry 4.0	PrinTrack - Traceability	O		O		O	O
OpenApps		O		O		O	O	

* Certified by CeTaq

** Under specific set of test conditions, consult your MPM representative for details.

Specification is subject to change without notice. Please consult factory for specifics.

ITW EAE maintains an ongoing program of product improvement that may affect design and/or price. We reserve the right to make these changes without prior notice or liability.

O = Optional; S = Standard