MPM® Edison™ Printer

The most accurate printer, designed for semiconductor yield improvement

Proven print process capability >2Cpk for 0201 metric components
The most accurate printer in the market, with advanced technology needed for ultra fine pitch and micro aperture printing processes

Component miniaturization in the semiconductor market challenges printing equipment with micro-thin stencil apertures and ultra fine pitch. The MPM® Edison™ meets these challenges with proven print process capability greater than 2 Cpk for 0201 metric components.

The Edison is the most accurate printer in the market. With a built-in ±8 micron machine alignment, and ±15 micron wet print accuracy (≥2 Cpk @ 6 sigma) proven through CeTaq Print Capability Analysis (PCA) testing, Edison’s wet print accuracy is 25% better than the next best printers.

Optimized Coplanarity
Innovative machine design achieves ultra-tight coplanarity between stencil and substrate enabling yield improvement for ultra-thin stencil printing.

Best Performance Closed-loop Squeegee
MPM Edison is optimized for ultra-fine pitch printing with a transfer efficiency that exceeds requirements for the smallest apertures. A single high precision load-cell with closed-loop pressure control and motor driven system enable precise and consistent squeegee force control across the entire print stroke in both directions, which helps improve yields especially for challenging thin substrate and stencil printing applications such as semiconductor back-end packaging.

Venturi Adjustable Vacuum System
The optional venturi high-flow vacuum system holds thin substrates securely and flat against the stencil which ensures and even more consistent print quality.

EdgeLoc II Board Clamping
EdgeLoc II provides consistent print result from edge to edge with a large, flat squeegee landing area that protects the squeegee blade and stencil from damage.
**NEW Paste Height Monitor**

The Paste Height Monitor 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 is a non-contact solution that can automatically add more paste to the stencil as it is needed.

**Highly Effective Wiping**

A super-size 65m paper roll with patented constant paper 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.

**Unmatched Speed and Throughput**

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

**Board Staging**

Ability to have three boards in the machine simultaneously, reduced distance on input conveyor by pre-loading the board during the print process results in reduced transfer times and improved cycle time.

**Key Values of MPM Edison for Semiconductor Manufacturers**

- The most accurate printer in the market
- >2Cpk process capability for 0201 metric
- **Optimal coplanarity**: Innovative machine design achieves ultra tight coplanarity between stencil and substrate
- **No print deviation**: Single load-cell closed-loop squeegee-force control eliminates front-to-back variation and maintains the set force across the entire board surface
- **Highly effective stencil wiping**: Patented paper tension control
- **Contamination free print area**: separate wiping and printing zone prevents cross contamination
- **Secured thin substrate for consistent print quality**: Venturi adjustable vacuum system
- **Consistent printing quality and stencil protection**: Large, flat blade-landing zone
- **Minimized changeover**: Super-size 65m paper roll
- **Adaptable down to 18-inch stencil**: Adjustable stencil shelf and adapter
- **Small footprint**: Compact design
- **Industry 4.0 connectivity**: OpenApps for customizable MES communication interface
MPM EDISON SPECIFICATIONS

BOARD HANDLING
- Maximum Board Size (X x Y): 450 mm x 350 mm (17.72" x 13.78")
- A dedicated work-holder is required for boards with an X size greater than 14"
- Minimum Board Size (X x Y): 50 mm x 50 mm (1.97" x 1.97")
- Board Thickness:
  - Foil Clamps: 0.1 mm to 6.0 mm (0.0039" to 0.236")
  - EdgeLoc: 0.8 mm to 6.0 mm (0.031" to 0.236")
- Maximum Board Weight: 4.5 kg (10 lbs)
- Board Edge Clearance: 3.0 mm (0.118")
- Underside Clearance: 12.7 mm (0.5") standard Configurable for 25.4 mm (1.0")
- Board Hold-Down:
  - EdgeLoc II, center-nest vacuum
  - Optional EdgeLoc+
- Board Support Methods: Magnetic pins and blocks

PRINT PARAMETERS
- Maximum Print Area (X x Y): 450 mm x 350 mm (17.72 x 13.78")
- Print Gap (Snap-off): 0 mm to 6.35 mm (0" to 0.25")
- Print Speed: 305 mm/sec (12.0"/sec)
- Print Force: 0 to 20 kg (0 lb to 44 lbs)
- Stencil Frame Size:
  - Adjustable Stencil Shelf is standard
  - 584.2 mm x 584.2 mm (23" x 23")
  - 737 mm x 737 mm (29" x 29")
  - Adapters available for smaller sizes

VISION
- Vision Field-of-View (FOV): 9.0 mm x 6.0 mm (0.354" x 0.236")
- Fiducial Types: Standard shape fiducials (see SMEMA standards), pad/aperture
- Camera System: Single digital camera - patented split optics vision

PERFORMANCE
- Total System Alignment: ±8 microns (±0.0003") at 6 sigma,
- Accuracy and Repeatability: Cpk ≥ 2.0*
- Qualification is performed using production environment process variables; print speed, table lift and camera movement are included in the capability figure.
- Wet Print Deposit: ±15 microns (±0.0006") at 6 sigma,
- Accuracy and Repeatability: Cpk ≥ 2.0*

- Based upon actual wet printing with positional accuracy and repeatability verified by a 3rd party measurement system.

- Cycle Time:
  - 300: 15 seconds including print and wipe
  - 200: 20 seconds including print and wipe
  - Based upon specific set of printing parameters, board size 5"x8".

FACILITIES
- Power Requirements: 200 to 240 VAC (±10%) single phase @ 50/60Hz, 15A
- Air Supply Requirements: 100 psi at 4 cfm (standard run mode) to 18 cfm (vacuum wipe) (6.89 bar @ 1.9 L/s to 8.5 L/s), 12.7 mm (0.5") diameter line
- Height (excluding light tower): 1580 mm (62.2") at 940 mm (37.0") transport height
- Machine Depth: 1442 mm (56.77")
- Machine Width: 1282 mm (50.47")
- Minimum Front Clearance: 508 mm (20.0")
- Minimum Rear Clearance: 508 mm (20.0")
- BTB Configuration: 10 mm (0.39")

Machine Capability Analysis (MCA) confirms printer performance in terms of accuracy and stability using specific tools. Manufacturer specifications are used to qualify the equipment. MCA, tested using a dedicated glass plate testing fixture guarantees that machine performance is within the manufacturer's specifications.