



LEADING THE WAY OF INNOVATION

EFEM | Wafer Sorters | Wafer Handlers

Full Line-up

HYPERMATION

The Concept During time-controlled fix-process sequences, idle time pockets occur, often dictated by the slowest process step, impacting overall tool throughput. Solutions include buffer stations for wafer storage and multi gripper systems for efficient robot travel. Original Equipment Manufacturers (OEMs) seek shorter cycle times while maintaining precision standards. Milara's *HyperMation* features self-learning algorithms used in project phases via process simulation with digital twins of semiconductor equipment, optimizing layout, cycle times, and module compositions. The aim is to eliminate idle times and maximize module utilization, tailoring algorithms to each machine's unique layout and processes.

The Application *HyperMation* offers two distinct utilization scenarios. First, through simulation of numerous process sequences, regular patterns emerge that can be programmed and executed offline, ideal for predictable and repeatable processes. This maximizes benefits like reducing idle and slag times. The second approach involves real-time rolling optimization, executing *HyperMation* algorithms directly on the process tool for rapid cycle optimization based on previous cycles. This approach is valuable in metrology equipment for analyzing varying substrate quality and is beneficial for sorting processes in yield inspection, prioritizing throughput optimization over visualization on the digital twin.

BENEFITS

Cost down

- Only one EFEM per process tool cluster
- Single point of communication for fab automation
- Minimize fab space and footprint
- Increased throughput real-time process flow optimization

Peace of mind

- Reliability: MTBF > 60,000 hours, MCBF > 10,000,000 cycles

Integration flexibility

- Freedom on design for capacity optimization and process sequence

Yield improvement

- Fully controlled cluster with highest process repeatability



- Modular design for unlimited process machines and modules
- 300 mm Load Ports with integrated wafer mapping
- World class Software UI with built-in SECS/GEM for factory automation
- Precise Dual Arm robot integrated with linear track
- Milara Smart Prealigner and OCR reader
- ISO 3 (ISO 14644) / Class 1 (FED STD 209E) Clean room compliant
- SEMI S2 and S8 compliant

FEATURES

EQUIPMENT FRONT END MODULES (EFEM)

FEATURES

- Highly customizable design for meeting all your production needs
- Modular design with vibration isolation, ensuring independency from any type of wafer processing, inspection and measurement
- One to seven 300mm Load Port configuration and/or up to 24 open cassettes for 100mm-200mm wafers. EFEM can be configured as a "bridge tool" for FOUPs and open cassettes of various sizes
- Depending on the Load Port configuration, the Milara EFEM can handle 300mm wafers exclusively, Film-Frame substrates exclusively, or a combination of both
- Industry-standard SEMI BOLTS interface allows for mounting of load ports, process modules, measurement and other equipment.
- Milara's EFEM can include a Fan Filter Unit providing minienvironment laminar flow for maximum cleanliness
- Full line of autonomus Wafer Prealigners centering from 50mm to 300mm wafers with 20 microns accuracy or better
- Through the wall or Ball Room mounting
- Optional SECS|GEM interface
- High-throughput and reliable Milara single or dual arm robot for fast wafer swapping
- OCR integrated within the prealigner module reliably track IDs on both sides of the substrate.
- Option to integrate process module, measurement or inspection equipment within the EFEM frame
- Variety of end effector options including vacuum gripping and edge gripping. End Effectors include integrated through-beam sensor for quick and reliable wafer mapping.
- Clean Linear track with linear motors
- Monitor and Keyboard
- Powder coat or stainless-steel finish
- Reliability - MTBF > 60,000 hours, (MCBF > 10,000,000 cycles)
- ISO 3 (ISO 14644) | Class 1 (FED STD 209E) Clean room compliant
- CE compliant
- Compliant with SEMI standards – S2 and S8



WAFER SORTERS

FEATURES

- *Highly customizable design for meeting all your production needs*
- *Innovative fully automated cassette load ports allow loading of new substrates and unloading of processed substrates without interrupting the robot cycle, providing unparalleled throughput of up to 720 wafers per hour*
- *Modular design with vibration isolation, ensuring independency from any type of wafer processing, inspection and measurement*
- *Industry-standard BOLTS interface allows for mounting of 300mm loadports, process modules, measurement and other equipment*
- *Loadport configurations allow processing of up to 24 carriers simultaneously to meet production demands*
- *Full line of autonomus Wafer Prealigners centering from 50mm to 300mm wafers with 20 microns accuracy or better*
- *Optional SECS|GEM interface*
- *High-throughput and reliable Milara single or dual arm robot for fast wafer swapping*
- *OCR integrated within the prealigner module reliably track IDs on both sides of the substrate*
- *Option to integrate process module, measurement or inspection equipment within the Sorter frame*
- *Milara Sorter can include a Fan Filter Unit providing minienvironment laminar flow for maximum cleanliness*
- *Variety of end effector options including vacuum gripping and edge gripping. End Effectors include integrated through-beam sensor for quick and reliable wafer mapping*
- *Clean Linear track with linear motors*
- *Monitor and Keyboard*
- *Powder coat or stainless-steel finish*
- *Reliability - MTBF > 60,000 hours, (MCBF > 10,000,000 cycles)*
- *ISO 3 (ISO 14644) | Class 1 (FED STD 209E) Clean room compliant*
- *CE compliant*
- *Compliant with SEMI standards – S2 and S8*



WAFER HANDLERS (SWS)

FEATURES

→ Milara Small Wafer Stations (SWS) have highly customizable design for meeting all your production needs

→ Low cost of ownership with high ROI

→ Small form factor to minimize the footprint

→ Modular design with vibration isolation, ensuring independency from any type of wafer processing, inspection and measurement

→ One or two open cassettes for 100mm-200mm wafers. Can be configured as a "bridge tool" for FOUPs and open cassettes of various sizes

→ Full line of autonomus Wafer Prealigners centering from 50mm to 300mm wafers with 20 microns accuracy or better

→ Optional SECS|GEM interface

→ High-throughput and reliable Milara single or dual arm robot for fast wafer swapping

→ OCR integrated within the prealigner module reliably track IDs on both sides of the substrate.

→ Option to integrate measurement, or inspection eqMilara Sorter can include a Fan Filter Unit providing minienvironment laminar flow for maximum cleanlinessupment within the frame

→ Milara Wafer Handlers can include a Fan Filter Unit providing minienvironment laminar flow for maximum cleanliness

→ Variety of end effector options including vacuum gripping and edge gripping. End Effectors include integrated through-beam sensor for quick and reliable wafer mapping

→ Monitor and Keyboard

→ Powder coat or stainless-steel finish

→ Reliability - MTBF > 60,000 hours, (MCFB > 10,000,000 cycles)

→ ISO 3 (ISO 14644) | Class 1 (FED STD 209E) Clean room compatible



Semiconductor Automation

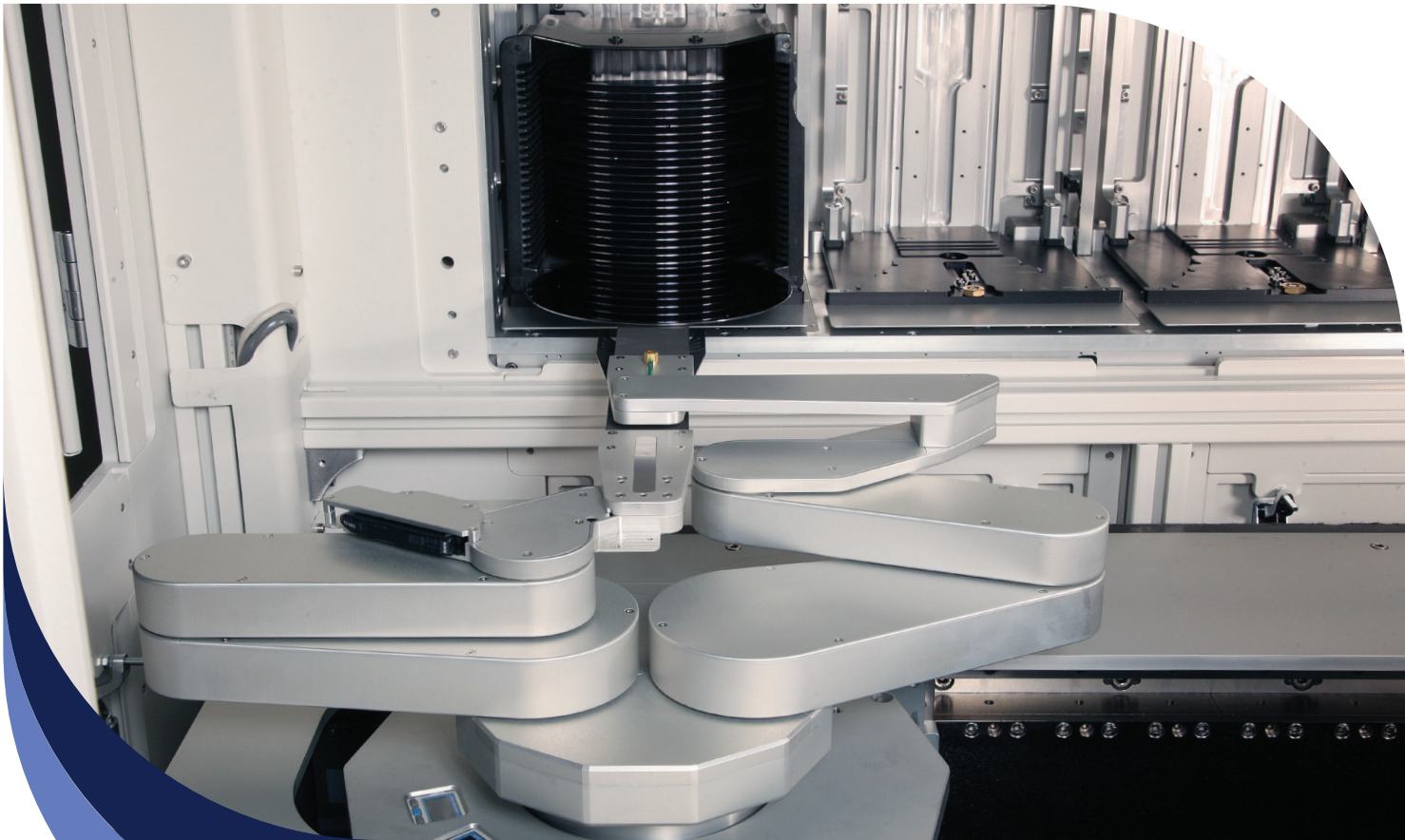
Custom solutions

Modular design

High throughput

Wafer handling components

FAB automation support



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