COATER MODULE

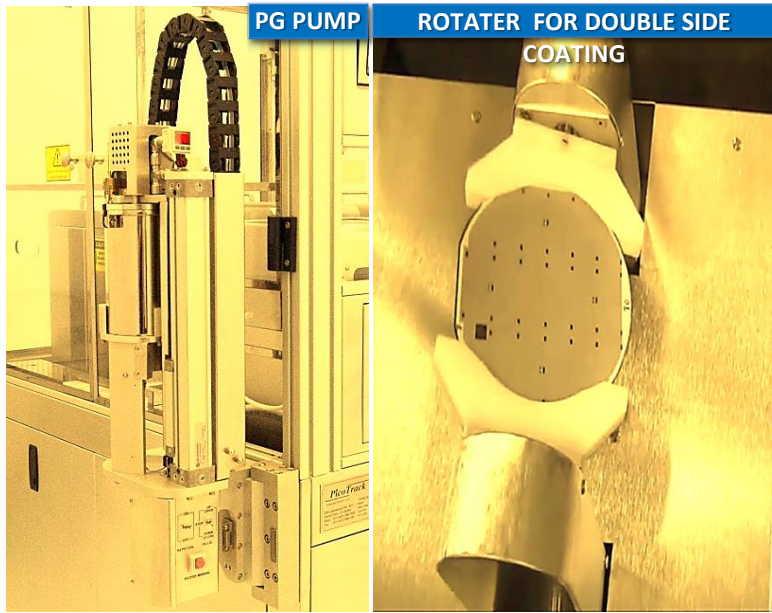## COATER

- Negative, Positive, SOG, Photo glass, Spray coater
- Smart servo motor and controller for spin
- Programmable moving dispense arm with 3 or more nozzle as 3/16", 1/4" and 3/8" OD tube
- Top and bottom EBR
- Catch Cup Rinse (CCR) & cleaning PR nozzle tips

STANDARD NOZZLE **BOTTOM EBR**

PG PUMP **ROTATER FOR DOUBLE SIDE COATING**

TOP EBR **PG NOZZLE**

TRACK #1 **FLOW CONTROL**
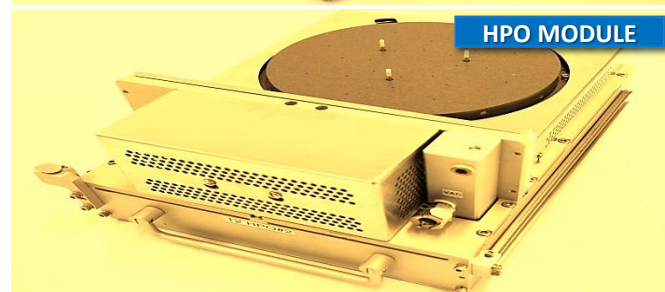
COATER #1 **COATER #2**

VPO/HPO

- Stack up and removable module
- Lifter programmable with / without VACUUM
- Watlow PID temp. controller
- RTD or TC Probe
- Second RTD probe for monitoring (optional)

TOWER BLOCK

VPO MODULE

HPO MODULE

CP MODULE

SYSTEM SPECIFICATION

SYSTEM SPECIFICATION	PCT- 150CRS
System dimension (Dual track) (2 Coater track & 2 DEV track)	(A) 93.5" length x 45" width x 90" height
System dimension (Dual track) (1 Coater & 1 DEV track)	(B) 75" length x 45" width x 90" height
System dimension (Single track) (1 Coater & 1 DEV)	(C) 50" length x 45" width x 90" height
Customized system configuration	Flexible configuration & number of modules
Wafer size (workable dual size)	Up to 6 inch, dual size wafer with auto conversion
Wafer shape	Round/Square/Rectangular/Triangle/Special
Wafer material	Silicon/Sapphire/ GaAs/Glass/IP/Ceramic...
Indexer module	4, 8 or more (available upon request)
Vapor Prime Oven module (VPO)	1, 2 or more (available upon request)
Hot Plate Oven module(HPO)	4, 8 or more (available upon request)
Chill Plate module (CP)	2, 4 or more (available upon request)
Coater and Developer module	2, 4 or more (available upon request)
Double side Coating & Developing	(available upon request)

COATER MODULE

COATER MODULE	
Maximum spin speed	7000 rpm
Spin speed accuracy	± 3 rpm
Acceleration range	10 -50000 rpm/sec
Dispense arm motion control	Stepper motor drive and rotation
Dispense arm accuracy	± 0.1 mm
Wafer centering	± 0.1 mm
Number of coater nozzles	3 or more (3/16", 1/4", 3/8" OD or customize)
Dispense method	Resist pump/dispenser (TBD by customers)
Pre-dispense function	Yes
Top/Bottom EBR	Yes
Catch-cup rinse (CCR)	Optional
Cleaning nozzle tip	Optional
Humidity & Temp Control	Optional
PR/Fluid temperature control	Optional ≤ 1^{0}C (10-40^{0}C range)
Coating uniformity	≤ 0.5%

DEVELOPER MODULE

DEVELOPER MODULE	
Maximum spin speed	7000 rpm
Spin speed accuracy	± 3 rpm
Acceleration range	10-50000 rpm/sec
Spin direction	Clockwise (+) & Counter clockwise (-)
Dispense arm motion control	Stepper motor drive, up/down and rotation
Dispense arm accuracy	± 0.1 mm
Wafer centering	± 0.1 mm
Number of developer nozzle	1 Spray + 1 stream or 2 spray + 2 stream, or more
Developer method	Stream, Puddle, Fan spray, Coin spray, or more
DI water top and back side rinse	Yes
N2 Air Ring	Yes
Dual develop fluid process	Optional
N2 Blow off	Optional
Developer fluid temperature control	Optional ≤ 1^{0}C (10-50^{0}C range)
E0 Uniformity	≤ 3 %

HOT PLATE OVEN (HPO)

HOT PLATE OVEN (HPO)	
HPO block type	Aluminum anodized with vacuum line or none
HPO Temp. PID controller	Watlow EZ-ZONE and heater element
Temperature range	25-250^{0}C, Δt: 50^{0}C ≤200s (Ramp U/D) (>250^{0}C option)
Temperature uniformity	±1^{0}C (25-150^{0}C), ± 2^{0}C (151-250^{0}C)
Bake method	Contact/ proximity bake/ or fixed proximity

VAPOR PRIME OVEN (VPO)

VAPOR PRIME OVEN (VPO)	
VPO block type	Aluminum with vacuum line
VPO temp. PID controller	Watlow EZ-ZONE and heater element
Temperature range	Up to 200^{0}C, Δt: 50^{0}C ≤200s (Ramp U/D)
Temperature uniformity	±1^{0}C (25-150^{0}C), ±2^{0}C (151-200^{0}C)
Prime method	Pressurize N2 with bubbler
Wafer contact angle	≥ 65^0 on prime silicon wafer
Contact angle uniformity	≤ 1.5^0 on prime base silicon wafer
Bake method	Proximity, contact, vacuum & purge bake

CHILL PLATE (CP)

CHILL PLATE (CP)	
Chill Plate block type	Aluminum anodized with vacuum line or none
Temperature	18ºC to 30ºC based on facility city water
Cool method	Contact/ Proximity contact

STABILITY

STABILITY	
Mean time between failure (MTBF)	≥ 200 hours
Mean time between assist (MTBA)	≥ 200 hours
Mean wafers between failure (MWBF)	≥ 10,000 wafers
Mean wafers between assist (MWBA)	≥ 2,000 wafers
Mean time between repair (MTBR)	≥ 2 hours
Uptime	≥98%
Wafer broken	≤ 1 in 10,000 wafers

INTRODUCTION

PCT-150CRS is the most advanced Coater and Developer tool set for Photolithography Process. Many features include face-lifting from Shuttle Robot Arm with dual or triple end-effector handlers, stacked up modules, PC & PLC controllers, and SECs/GEM compliance. The system is designed to focus on high-reliability, high-throughput, footprint reduction, user-friendly, flexible process flow, various interface tools, easy maintenance, conservation of chemical and energy efficient. Our tool set is cost effective for Ownership, Operation, Spare Parts and Services.

Besides PCT-150CRS, we also carry other tool sets such as: PCT-200CRS 8 inch, Scrubber, Lift-Off, Film Frame Cleaner, Mask Cleaner, and stand-alone Coater or Developer or Hot Plate. Please visit our web-site **www.picotrack.com** for more details.

## SYSTEM DEVELOPMENT & CORE DESIGN

- **2010:** Established R&D by engineering group
- **2011:** Alpha Mode Development
- **2013:** Beta Mode and production
- Designed concepts following USA standard system
- Standard or customize system configuration
- Feasible for negative, positive, SOG, and photo-glass process
- Application & manufacturing are based on Semi org. standard
- Using industrial proven brand name parts and devices
- Commercially available "off the shelf" component
- Compacted footprints and easy services
- Modular designed for easy access and maintenance
- High quality materials & good qualification
- Durable testing, debugging & fully functional testing program
- High performance spin servo motor and controller for expected coating thickness and uniformity control
- Enhanced spin catch cup for uniformity
- Clean Nozzle function programmable to minimize defects
- Upgrading wafer chuck to address unique process concerns
- Dual or triple end-effector to minimize Load/ Unload time
- Automatic conversion for dual size wafer with no required downtime for hardware changeover
- Multi-recipe line programs for process flow
- Optimized recipes to improve processing & wafer throughput
- Various tool sets are installed worldwide

SYSTEM FEATURES

- Windows OS based on PC / PLC controller with/without network connectivity
- Intuitive recipe generation & unlimited recipes storage
- History of system login & logout can be logged for recording & tracing
- Daily data capture & report generation capability
- Traceable system: operation history, system wafers, system hours, operation wafers & operator error-free
- Production integrated recipe selection
- Paperless pass-down through e-log
- Production summary & lot history
- Comprehensive alarm management
- Teach-mode calibration
- Single/continuous component exercise
- Unlimited recipes (advantageous feature for multiple users)
- Auto, single and manual process
- All sensor status display on monitor
- GUI display (available for bilingual)

OPTION ITEMS

- SECs/GEM Compatibility: SEMI International Standards E5-95 (SECS II), E30-95 (GEM) and E37-95 (HSMS)
- Chemical cabinets & canister auto-refill
- Waste Collection Unit
- Photo-resist pump & syringe dispenser unit
- Ultrasonic resist spray nozzle (spray coater)
- Ozone chamber process
- Function of auto-cleaning catch-cup & nozzle tip
- Fan filter unit (FFU)
- Air-flow humidity & temperature control
- Liquid flow-rate & volume control
- Barcode scanner
- Wafer scanning sensor indexer
- Interface aligner or stepper through-track mode

DEVELOPER MODULE **DUAL DISPENSE ARM**
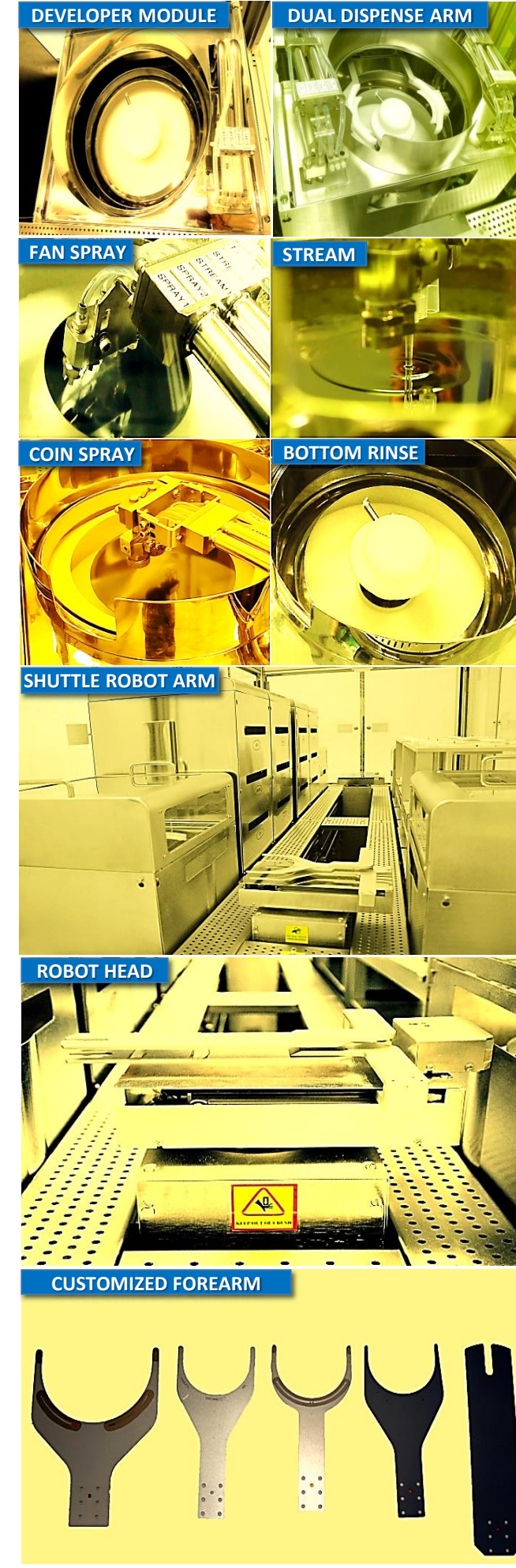
DEVELOPER

- Negative, Positive, SOG, Photo glass… process
- Smart servo motor and controller for spin
- Spin direction: Clockwise & counter clockwise
- Programmable moving dispense arm with multi nozzle as stream and spray
- DI water for top rinse and back side rinse
- Fluid flow scale detection

FAN SPRAY **STREAM**

FLOW CONTROL **TRACK #2** **COATER**

COIN SPRAY **BOTTOM RINSE**

DEVELOPER

SHUTTLE ROBOT ARM

SHUTTLE ROBOT ARM

- Smart precision servo and stepper motor control
- Dual or triple pick up arms with customized forearm for special wafer
- Optical wafer mapping sensor

ROBOT HEAD

CHEMICAL CABINET

- Auto or manual refill
- Full communication to system
- Sensors ensure safety and protection

CUSTOMIZED FOREARM

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COATER/DEVELOPER TOOL SET

COATER/DEVELOPER TOOL SET

PCT-150CRS (up to 6 inch wafer)
SINGLE TRACK SYSTEM
COATER & DEVELOPER

PCT-150CRS (up to 6 inch wafer)
DUAL TRACK SYSTEM
1 COATER TRACK & 1 DEVELOPER TRACK

PCT-150CRS (up to 6 inch wafer)
DUAL TRACK SYSTEM
2 COATER TRACK & 2 DEVELOPER TRACK