SEMICONDUCTOR
PRODUCTION
SYSTEMS

Your guide to innovative production

University brochure

Innovative products for semiconductor processes

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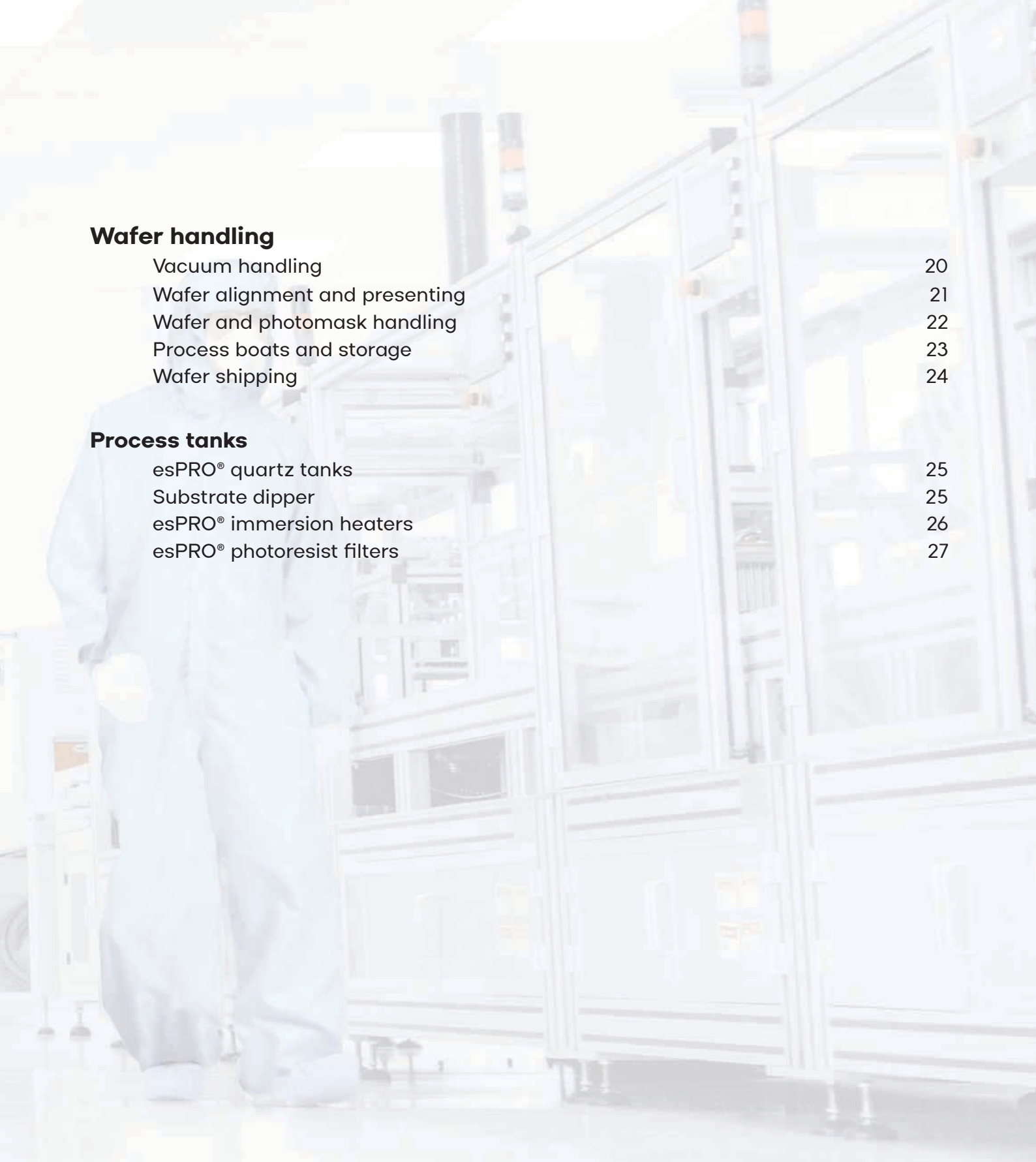
Contents



Wafer handling

Process tanks

POLOS® SPIN150x spin coater

The new POLOS® SPIN150x offers precise and repeatable process control. It is made from natural polypropylene (NPP) or optionally available in chemically resistant PTFE and suitable for all typical spin processes. This new version of the well-proven model comes in a standard and an advanced version.

The POLOS® SPIN150x is ideal for processing a wide range of substrates with a diameter of up to 150 mm or square samples with dimensions 100 x 100 mm.

UNIQUE NEW DESIGN

The unique outer shell and drain design allows easy switching between table-top and in-deck model. The modular design enables the user to upgrade the unit using a wide range of different accessories to ease dispensing and overall handling.

MOTOR HOMING POSITION

The new SPINx-series has the ability to define a motor homing position, allowing for easy integration in robot controlled/automated environments.

AUTO LID

The lid can be automatically opened and closed using the User Interface or alternative a foot pedal (ideal for glovebox usage). In addition, it is also possible to automatically open the lid as a final step of your recipe.

LIQUID FILTER TRAP

The SPINx-series is equipped with a liquid filter trap to protect the spin coater's critical components. It will capture any liquids or resists entering the vacuum lines via the process chamber or vacuum chuck in a liquid container. The container can be viewed through a cut-out in the spinner housing, for easy maintenance.

ADVANCED MODEL

The advanced version of the new POLOS® SPIN150x is standard equipped with an auto-closing lid, and can be expanded with automation options, such as a linear dispense arm, and backside rinse. These options are not available for the standard version.

Desktop model *In-deck model*

EASY CHAMBER ACCESS

The vacuum chuck sits above the edge of the bowl allowing easy access to the wafer/substrate with an end effector, tweezers or vacuum wand. This is a unique requirement enabling robot handling.

SPECIFICATIONS HARDWARE:

- Liquid filter trap
- Automatic lid, also controllable via foot pedal (advanced version)
- Programmable motor homing position
- Center injection holder for syringe or dispense nozzle
- Lid lock and vacuum sensor for user safety
- Large (detachable) touchscreen display
- USB-port to store recipes on USB-drive and for software updates specifications drive-unit
- Indirect brushless drive unit - up to 12.000 RPM
- High acceleration and accuracy: 1 - 30.000 RPM
- Clockwise/counter clockwise rotation and puddle mode
- Unique design to switch between desktop and in-deck model

STANDARD ACCESSORIES:

- Vacuum chuck for 4 - 6-inch wafers
- Fragment adapter for fragments of 10 mm and larger

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Our new SPINx-series does not stop with the POLOS® SPIN150x spin coater, we also have newly designed versions of our trusted 200 mm and 300 mm spin coaters. Keep an eye out on our websites: www.sps-international.com and www. sps-polos.com for the latest details and availability!

POLOS® SPIN200x spin coater

The new POLOS® SPIN200x offers precise, repeatable process control. It is made from natural polypropylene (NPP) or optionally available in chemically resistant PTFE. Similar to the SPIN150x, this new version is available in a standard and an advanced version both as table-top and in-deck model. The units have a programmable motor homing position, and a liquid filter trap, while an auto-lid is available as part of the advanced versions.

The new SPIN200x is ideal for processing a wide range of substrates with a diameter of up to 200 mm or square samples with dimensions 150 x 150 mm.

POLOS® SPIN300x spin coater

The new POLOS® SPIN300x offers precise, repeatable process control. It is made from natural polypropylene (NPP) or optionally available in chemically resistant PTFE. It is available in table-top and in-deck model with programmable motor homing position, auto-lid, and liquid filter trap. It will be available as advanced version only.

The new SPIN300x is ideal for processing a wide range of substrates with a diameter of up to 300 mm or square samples with dimensions 200 x 200 mm.

AVAILABLE BEGINNING 2025!

POLOS® spin processor options

Spin coaters offer various options to suit different applications: syringe holders, dispense systems, centering tools, pumps and dispense units. These options range from table-top tools to advanced automated systems, accommodating various materials and thickness requirements.

MEGPIE

The sapphire MegPie is a single-wafer megasonic transducer for cleaning and sonochemical processing. It applies a uniform dose of acoustic energy to a rotating substrate. The MegPie will improve process efficiency and lower process time.

APPLICATIONS:

- Post-CMP cleaning
- LIGA processes
- TSV processing
- Mask cleaning
- Pre-SOIC bond cleaning
- Etch assist
- SU-8 develop
- Plating pre-cleaning
- Lift off
- Pre-plating bubble removal
- Resist strip
- Post-laser cleaning

LINEAR DISPENCE ARM

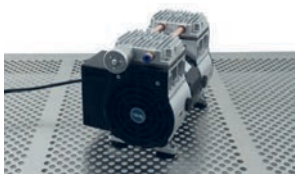
Connect up to 3 linear dispense lines with our POLOS® dispense arm. It has pre-programmed positions and can be powered and controlled through the spin coater.

AUTO-LID

The lid is operated though a build-in stepper motor and can be controlled via the User Interface for a foot pedal. In addition, it is also possible to automatically open the lid as a final step of your recipe.

OTHER SPINNER OPTIONS

Vacuum pump
The vacuum pump is quiet and reliable



Dispense pump
A peristaltic pump with quick-load head

Syringe holder starter kit
Consisting of several 30 cc dispense barrels, needles and plungers

Center dispense system: opus
Quicker dispensing with higher reliability of results

Centering tool
Easy to use centering tool is adjustable for different substrate sizes

Central dispensing syringe holder
For single or triple syringes, with integrated N2 diffuser

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POLOS® SPIN wet station

An extremely versatile platform for a wide range of processes. Based on the proven high-quality POLOS® single substrate spin processor, the modular design spin process station provides excellent value for money: full plastic construction, with high-end components, compatible with any chemical environment in a modular set-up, suitable for your specific requirements.

The seamless integration of polypropylene (optional PTFE) spin processor in the base station allows you to work with all kinds of chemicals. In the station housing various modules can be incorporated and centrally controlled for supply of chemicals and gases.

Standard configurations are available for cleaning substrates as well as photo masks, photoresist coating, developing, etching and lift-off processes.

Value for money: fully automatic, accurate and repeatable processing.

AUTOMATIC DISPENSE

The new optional POLOS® dispense arm is designed to connect up to 3 linear dispense lines to your POLOS® spin coater. It comes with pre-programmed positions and can be powered and controlled through the spin coater.

FREELY PROGRAMMABLE PROCESS

- Sequentially programmable multiple dispense lines.
- Step-less programming of various flows within a process step from 150 up to 2500 ml/min (depending on dispense line thickness. For optional integrated mixing systems, the mixing rates of the various chemicals can be programmed per step.

Source: Fraunhofer ENAS-Dr. Knut Gottfried, Precise Bulk Silicon Wet Etching 2013

POLOS® hotplates

Our table-top hotplate is a versatile tool for R&D and pilot lines. It is designed with a soft-close lid and is suitable for soft bake as well as hard bake processes, and curing of photoresist, epoxy or any other work requiring precise temperature control. The POLOS® Hotplate is also available as an advanced version. This unit is standard equipped with complimentary features such as an nitrogen purge for inert bake, lifting and proximity pins and vacuum bake.

FEATURES

- Nitrogen purge for inert bake
- Lifting and proximity pins
- Vacuum bake
- 2 available sizes: 200 mm and 300 mm wafers
- Soft-close lid, enabling single-handed closing
- 2-layer design reducing exterior lid temperature
- Programmable storage of 20 programs (temperature/time)
- Countdown timer (1 - 999 sec.)
- Temperature uniformity ±1°C
- Available in a standard and advanced model

AVAILABLE WITH A 200 X 200 MM OR A 350 X 350 MM HEATING AREA!

Item	Specifications
Temperature range	50 - 230°C
Heater surface area	220 x 220 mm or 350 x 350 mm
Heater block material	Aluminum (anodized)
Housing material	Stainless steel
Power	Max. 1200 W (approx. 550 W to remain at 200°C
Voltage	230 or 110 VAC
Weight	12 kg
Dimensions device	422 x 295 x 201 mm

OPTIONS:

- ■ Lifting pins
- ■ Proximity pins
- ■ Vacuum bake

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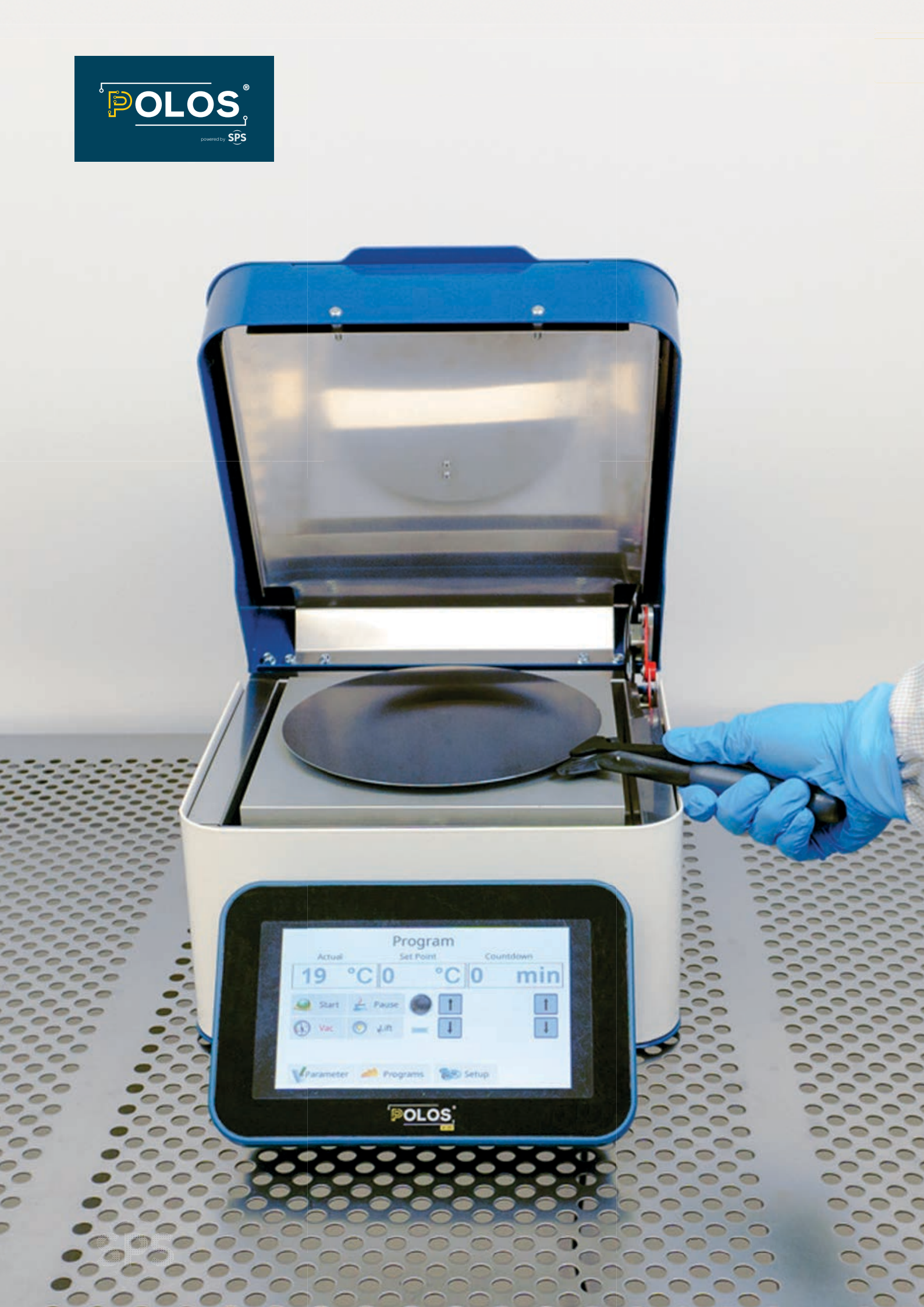
POLOS®
powered by SPS



POLOS® ultrasonic spray coating systems

Our POLOS® table-top ultrasonic spray coating systems are used for precision coating in the fields of R&D and small volume production. Typical applications include photoresist coatings for various wafer materials and creating functional layers for thin-film processes.

POLOS® UC320

Our systems allow high precision nano-particle coating with more efficient photoresist consumption compared to standard photoresist application techniques. On our ultrasonic spray coating systems the material usage ratio exceeds 95%, **this will allow our users to reduce costs of photoresist consumption and improve their process efficiency.**

POLOS® UC330

Listening to the needs of our customers, we designed a compact system with easy-to-use software controls, and the ability to choose from the wide range of ultrasonic nozzles and complimentary options that will allow our customers to find the perfect match for their process application.

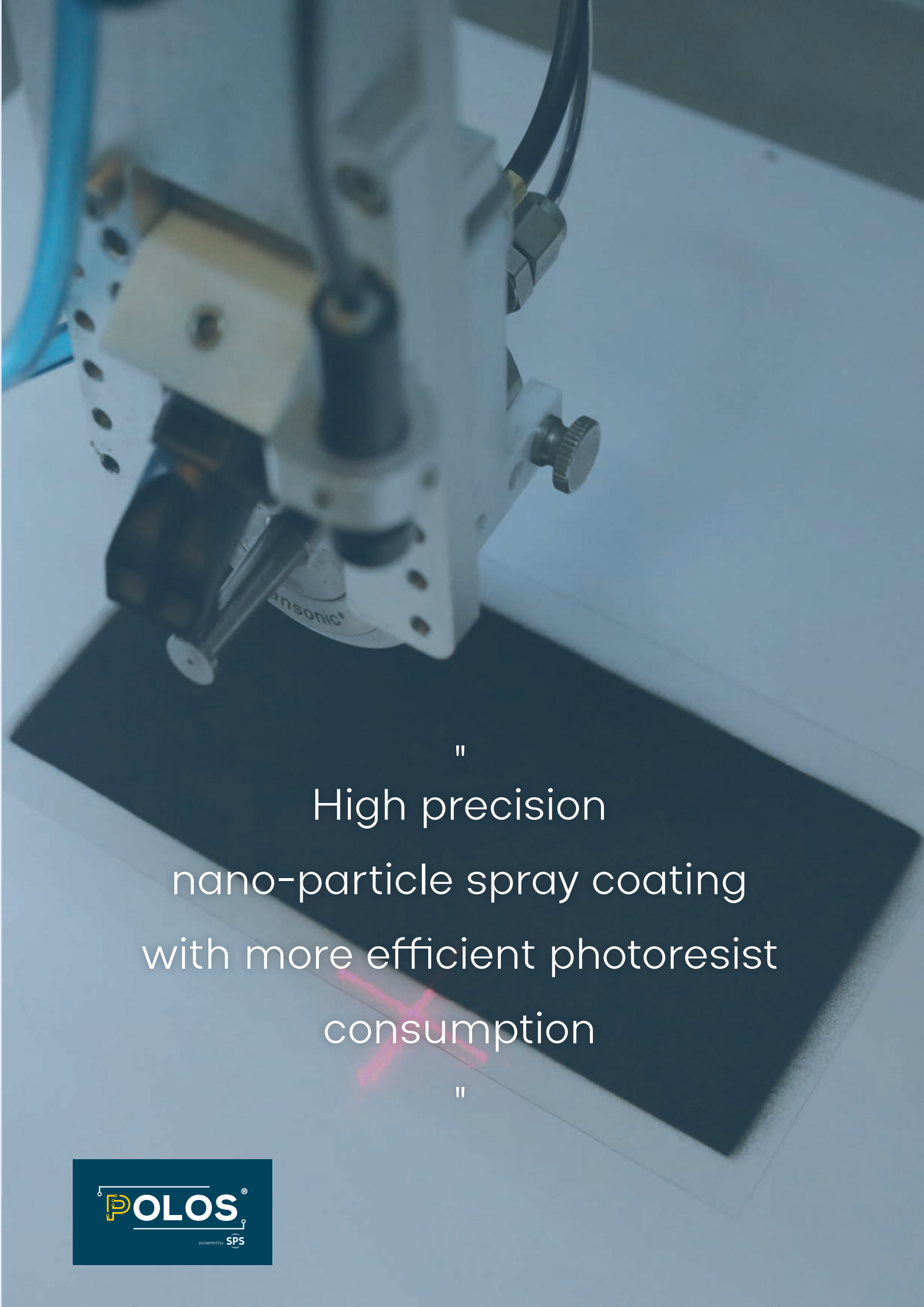
FEATURES

- High precision nanoparticle coating due to ultrasonic nozzle, material consumption ratio > 95%
- Compatible with all series of POLOS® by Siansonic® nozzles; spray width from 1 mm to 100 mm and flow rate of 0.001 ml/min - 50 ml/min
- Max. spray area UC320: 150 mm x 150 mm
- Max. spray area UC330: 300 mm x 300 mm

OPTIONS:

- Vacuum heating plate with maximum temperature of 150°C.
- Ultrasonic bath: used to pre-disperse the coating liquid.
- Ultrasonic syringe: Used to provide nano-particle dispersion during the liquid delivery process and to avoid the solid settlement during spray coating.

Item	Specifications
Utrasonic nozzle	All series of patented ultrasonic spray nozzles available. Controlled by a multi-closed-loop system with a control step size of 0.01 W for high accuracy.
Motion system	High-precision XYZ motor driven stages and laser positioning allowing accurate controllable and repeatable coating.
Liquid delivery	Syringe pump with accuracy up to 0.01 ul/min. Different specifications can be equipped to achieve stable liquid supply.
Exhaust system	Connect the build-in exhaust system to your cleanroom exhaust line.



"

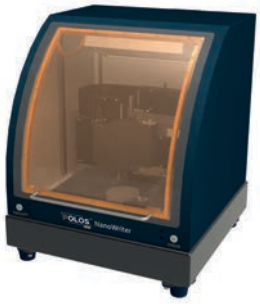
High precision nano-particle spray coating with more efficient photoresist consumption

"

POLOS®
powered by SPS

POLOS® direct laser writers for maskless lithography

POLOS® has a full line of direct layer writer systems using advanced printing technologies that directly inscribe patterns or layers onto substrates without the need for intermediate steps. These systems offer high precision, efficiency, and flexibility, making them ideal for applications in electronics, manufacturing, and materials science, where accuracy and speed are critical.



POLOS® MICROPRINTER

The POLOS® MicroPrinter is a maskless lithography device for rapid prototyping, based on µLCD projection technology, compatible with a wide range of resists and substrates. Our system can produce any 2D shapes at micron resolution without the need for a hardmask.

- Writing resolution down to 2 µm
- Adjustable writing field and resolution with exchangeable objectives
- Compatible with CAD files and bitmap images
- Compatible with a wide range of substrates

POLOS® BEAM

The POLOS® Beam compliments the existing benefits of nanopatterning at will by bringing it to the desktop without any compromise in performance. Semi-automatic alignment allows multilayer alignment to be completed within minutes.

- Full-featured maskless lithography, smaller than a desktop computer
- Sub-micron resolution while exposes a write field in less than two seconds.
- Piezo actuators reach focus in less than a second when combined with our closed looped focus optics

POLOS® NANOWRITER

Meet the smallest high quality laser beam spot available in the market. It includes a 405 nm optical module capable of writing structures as small as 0.8 µm in photoresist layers. Sub-micron features, ease of operation and low maintenance.

- High quality, cost efficient maskless lithography tool
- Market conform 0.8 µm resolution
- 375 nm source available for i-Line resists
- Compact tabletop system which requires minimum cleanroom surface.

POLOS® NANOWRITER ADVANCED

The POLOS® NanoWriter Advanced is a versatile UV laser writer with ultra high precision components, specifically designed to give the user the highest degree of freedom to create micro structures in photo sensitive layers. The rasterizing principle of the machine ensures proper and constant exposure over the whole surface.

- Highest resolution in the market with 405 nm laser
- Minimal maintenance costs
- Compact optical module: use a spare optical unit for revolutionary machine downtime reduction
- User-friendly operation

System comparison

Brand	POLOS®	POLOS®	POLOS®	POLOS®	POLOS®
Model	**MicroPrinter**	**BEAM**	**BEAM XL**	**NanoWriter**	**NanoWriter Advanced**
PC with software	Included				
Resolution	2 µm to 23 µm	0.8 µm	0.8 µm	0.8 - 1.5 - 2.5 µm 5 µm option	0.3 - 0.6 - 0.9 µm 5 µm option
Max substrate size	100 x 100 mm	106 mm x 106 mm	150 mm x 150 mm	100 x 100 mm	
Max exposed area	75 x 75 mm	120 mm x 120 mm	155 mm x 155 mm	110 x 110 mm	
Max layer thickness	120 µm	40 µm	40 µm	Few microns	
Light-source wavelength	435 nm	405 nm	405 nm	405 nm (375 nm option)	
Optional light-source wavelength	N/A	375 nm	375 nm	375 nm	
Auto-focus wavelength	525 nm	570 nm	570 nm	650 nm	
Grayscale levels	256	256 upon request	256 upon request	4095	
Light-source lifetime	3 900 hour lamps	> 20.000 hours	> 20.000 hours	> 20.000 hours	
Alignment	Topside/BSA	Topside	Topside/ BSA Optional	Topside/BSA	
Alignment resolution	1 µm	1 µm	0.1 µm	0.5 µm	
Writing speed	Prints the full substrate from few seconds to several minutes.	up to 200 mm/s	up to 200 mm/s	200 mm/s	
Writing speeds @ highest res.		5 mm^2/min	5 mm^2/min	4 mm^2/min	1.4 mm^2/min
Writing speeds @ lowest res.		5 um resolution @ 80 mm^2/min	5 mm^2/min	35 mm^2/min	
File format	BMP, GDSII, DXF	.bmp, .png, .tiff, .gds	.bmp, .png, .tiff, .gds, .dxf	BMP, TIFF, GDSII, CIF, DXF	
Dimensions (W x D x H) in mm	360 (w) x 360 (d) x 600 (h)	330 x 310 x 340	370 x 360 x 340	580 (w) x 600 (d) x 708 (h)	600 (w) x 600 (d) x 750 (h)
Weight	40 kg	20 kg	27 kg	260 kg	
Facilities	Only electricity	Electricity	Electricity	Electricity & compressed air. Vacuum pump included.	
Room temp. regulation needs	Not needed	N/A	N/A	+/- 1 °C	
Warranty	1 year	1 year	1 year	1 year	
Warranty option	+2 years	+2 years	+2 years	1 year	

Mask aligners

We offer various mask aligner systems: from entry-level low cost 4" & 6" LED (& broadband) systems, to a full range of systems from 4" to 12" broadband NUV and DUV, manual to fully robotic, large scale FPD and custom engineered systems. The mask aligners for wafers are applicable for various fields and at present utilized in broad fields, such as R&D of semiconductors, MEMS applications, research on bio chips and Nano technologies.

MANUAL MASK ALIGNER - 4" LED

The MDA-400LJ is a mask aligner specially designed for university and research institutes. The system is equipped with a maintenance free 365 nm LED light source (50,000 hours lifetime) and therefore ideal for resist processing.

MANUAL MASK ALIGNER - 4" UV

Our manual control MDA-400M series feature UV Light source 350 nm to 450 nm, 365 nm Intensity: 20 - 30 mW/cm^2 and a beam size of 6.25" x 6.25" (3 % beam uniformity for 4" wafers) and automatic exposure system. The unit comes with a Dual CCD zoom microscope with 19" LCD monitor: magnification; 5X - 20X digital CCD.

MANUAL MASK ALIGNER - 6" UV

The MDA-400M-6 is designed for research organizations who want to work with a state-of-the-art technology mask aligner. This highly accurate system allows researchers to easily develop their processes on wafers up to 6".

SEMI-AUTOMATIC MASK ALIGNER - 6" UV

For users of both thick high aspect ratio photoresists and thin high-resolution photoresists: The MDA-600S can process from 0.8 um and high aspect ratio PR to approximately 170 um thickness without additional optics. That should suit users varying needs, without any system changes.

UV INTENSITY METER (365 NM)

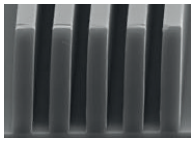
This hand-held digital UV intensity meter is suitable for measuring 365 nm (UV I-Line), 0 ~ 999.99 mW/cm^2 intensity, as well as uniformity. This meter comes with a built-in charger, and does not require a battery.

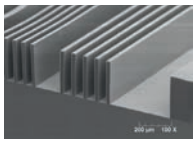
IONIZING AIR PENCIL

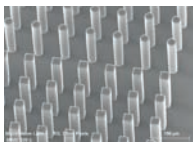
The pencil-type air ionizer can help remove static electricity on a material or object. This device is an ideal tool to clean parts and assemblies, not only in the semiconductor market but also in the medical and electronic industries.

Photoresist products

The KemLab™ products in our portfolio focus on quality and cost- competitive, high-tech photosensitive imaging materials used in the electronics industry. We offer positive and negative photoresists for advanced packaging, MEMS & microfluidics, integrated circuits, metal lift-off, compound semiconductors, LED, image reversal, diffraction gratings and sensor markets.

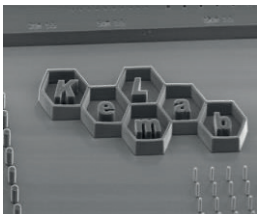


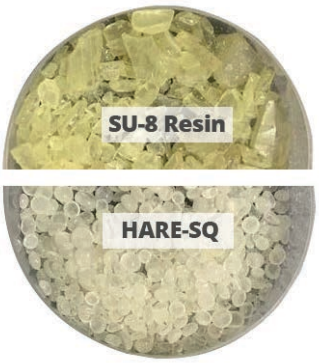




HARE SQ

Negative Tone Epoxy





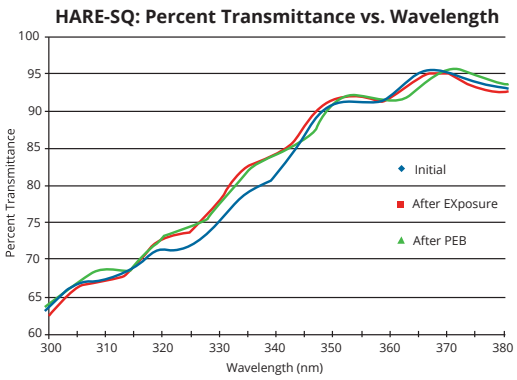
BENEFITS

- Short lead times
- Competitive pricing
- Product support
- Resist customization

We can offer a variety of photoresists. Visit our website to find the complete list of resists by film thickness, competitive products, tone, developer, or exposure.

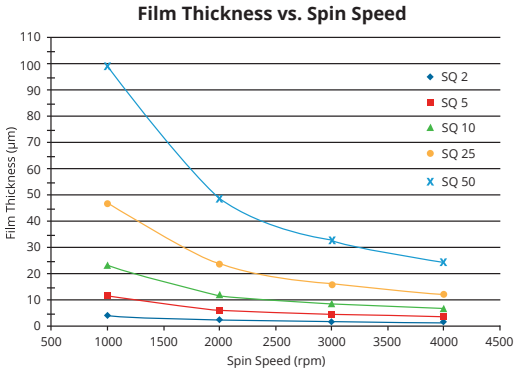
NEGATIVE

- 2 - 200 µm FT
- Applications: microfluidics, MEMS
- Clearer layer (cleaner then SU-8 Resin)
- Lower opacity (higher transparency - less dosing power/power intensity required)
- Fewer particles
- Fewer micro-bubbles
- More consistent product



ADVANTAGES

- The HARE-SQ photoresist uses an epoxy resin with superior cleanliness and excellent reproducibility
- Consistent surface energy of cross-linked resist (an important property for microfluidic applications).
- Fully compatible with SU-8 processes



SUBSTRATES

HARE SQ adheres to variety of substrates; including silicon, gold, aluminum, chromium and copper. Proper substrate cleaning & dehydration improve adhesion.

Layer thickness measurement

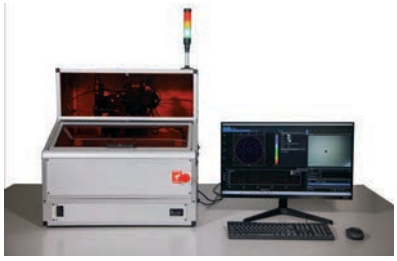
Our product line of layer thickness measurement systems provides precise and non-destructive analysis of thin films. Utilizing spectroscopic ellipsometry and reflectometry techniques, these systems deliver accurate thickness and optical properties data. They ensure quality control and process optimization in various fields, including semiconductors and coatings for both research and industrial applications.

POLOS® FR-ES

FR-ES is a compact and light-weighted unit for the characterization of coatings. With FR-ES the user can perform reflectance and transmittance measurements in the 370 - 1020 nm spectral range. The FR-ES platform is designed to provide an excellent performance in terms of characterization of coatings. FR-ES is assembled by user selected modules. By the combination of different modules, the final set-up meets any end-user needs.

POLOS® FR-SCANNER-AIO-MIC-XY200

FR-Scanner-AIO-Mic-XY200n is a holistic platform for the fully-automated in-depth characterization of patterned single and multilayer coatings on wafers. It provides 200 mm of travel along X and Y axes and is suitable for accurate measurements while the sample is secured on the stage through vacuum. The tool is offered in an endless range of optical configurations within the 200 - 1700 nm spectral range.



POLOS® FR-PRO

FR-pRo is a modular and expandable platform for the characterization of coatings in the 1 nm - 1 mm thickness range. FR-pRo tools are tailored to the customer needs and are used in a wide range of diverse applications such as: Absorbance / Transmittance / Reflectance measurements, Film Characterization under temperature and ambient controlled environment or even in liquid environment and many more. FR-pRo is assembled by user selected modules. By the combination of different modules, the final set-up meets any end-user needs.

POLOS® FR-MIC

FR-Mic is the modular optical column for fast & accurate coating characterization applications that require spot size as small as few micrometers, Typical examples include: micro-patterned surfaces, rough surfaces and numerous others. It can be combined with a dedicated computer controlled XY stage, allowing the automated thickness & optical properties mapping of samples fast, easily and accurately.

System comparison

Model	FR-ES	FR-Scanner-AIO	FR-pRo	FR-MIC
Type	Table-top system	Table-top system	Table-top system	-
Spectral range	200 nm - 1700 nm	200 nm - 1700 nm	190 nm - 1700 nm	200 nm - 1700 nm
Thickness range	12 nm - 250 µm	4 nm - 130 µm	200 nm - 250 µm	4 nm - 130 µm
Thickness accuracy	0.2 % - 3 nm	2 nm or 0.2 %	0.2 % or 1 nm	0.1% or 1 nm
Thickness precision	0,05 nm - 0,1 nm	0.02 nm	0.07 nm or 1‰	0.02 nm
Light source MTBF	Halogen (internal), 3000 hours (MTBF)	2,000 hours or 5,000 hours	2,000 hours	3,000 hours
Dimensions (mm)	220 (w) x 200 (d) x 60 (h)	800 (w) x 600 (d) x 850 (h)	390 (w) x 320 (d) x 420 (h)	N/A
Power requirements	10 V / 230 V, 50-60 Hz, 10 W	Single-phase 96-230 V, 5 A@100V, 2 A@220V	110 V / 220 V	N/A

ALL SYSTEMS INCLUDE THE FOLLOWING FEATURES:

- Single-click analysis (no need for initial guess)
- Dynamic measurements
- Reflectance, transmittance, absorption, color parameters
- Save videos for presentations
- 350+ non-identical materials
- Running on Windows 7/8/10
- Free of-charge software update

APPLICATIONS

- Universities & research labs
- Semiconductors (oxides, nitrides, si, resists, etc.)
- MEMS devices (photoresists, si membranes, etc.)
- LED
- Data storage
- Hard/soft coatings on curved substrates
- Polymer coatings, adhesives, etc.
- Biomedical (parylene, balloon wall thickness, etc.)
- Chemical measurements
- Dielectric characterizations
- Optical coating
- Non-metal films
- PV industry
- Liquid crystal display
- Substrates: transparent (glass, quartz, etc.) and semi-transparent
- And more... (contact us with your requirements)

2-inch table-top atomic layer deposition system

Meet the smallest footprint ALD tool available on the market. The AT200M is specifically designed for simple operation and installation with a focus on educational and metrology markets where small size and cost effectiveness are the largest concerns.

TABLE-TOP ALD SYSTEMS

The AT200M utilizes semiconductor grade components, metal-sealed lines and a robust PLC driven user interface that yields fast cycling and high-quality single component thin films while still realizing easy maintenance and safe. repeatable operation.

FEATURES

- Small footprint desktop thermal ALD system
- Stocked for immediate shipment. worldwide.
- Accommodates samples from 2" x 2" x 3" or two 2" round wafers (customizable chucks)
- 2 precursor ports with heat traced lines
- Vented precursor enclosure
- High temperature compatible fast pulsing ALD valves with ultrafast MFC for integrated inert gas purge - standard
- Up to 2 heated precursors
- All stainless-steel chamber with temperature range to 250 °C
- High exposure available with static processing mode
- 5" Display with integrated PLC control
- Lifetime SW upgrades included
- 1 year warranty (parts and labor included)

OPTIONS:

- Vacuum pump
- Ozone generator (ATOzone)
- Bottle heaters
- ALD precursors

Also available: AT650P: plasma ALD system

- Plasma ALD at the cost of a thermal system
- Warm walled aluminum chamber
- High exposure available with static processing mode
- Simple system maintenance and low utilities cost
- Featuring: low oxygen contamination (in nitrides, etc..), high electron density, low plasma damage
- Substrate temperatures from RT to 400°C ± 1 °C
- High exposure available with static processing mode

4-inch table-top atomic layer deposition system

ALD technology has taken a leap in the past couple of years. SPS-International offers various systems, including a table-top version for surface-controlled layer-by-layer deposition with atomic layer accuracy.

TABLE-TOP ALD SYSTEMS

There is a need for deposition equipment optimized for growing conformal thin films at smaller scales at a reasonable cost. The AT410 4" system accomplishes these goals and fills a space in the market.

The AT410 ALD system provides a solution to conformal, conductive thin films for 3D sample prep while also providing traditional 2D coatings that are currently grown using sputtering/evaporation. The AT410 not only pushes the boundaries, but is also an effective replacement for current sample preparation processes all within a benchtop configuration at a comparable price point.

R&D SYSTEM FOR GROWING CONFORMAL THIN FILMS AT SMALLER SCALES

Large substrate and precursor temperature ranges

- Chamber temperatures from RT to 350 °C ± 1 °C
- Precursor temperatures from RT to 150 °C ± 2 °C with opt. heating jackets

Fast cycling capability

- 6-10 cycles/min or up to 1.2 nm/min of Al_2O_3 (best in class)

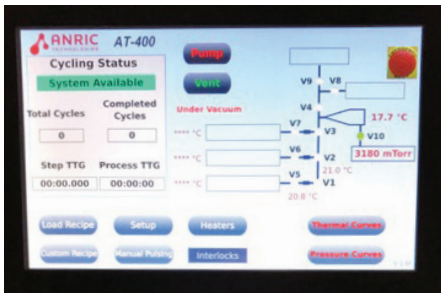
Up to five ALD precursor sources at one time

- Three (3) organometallic or other metal containing sources all up to 150 °C

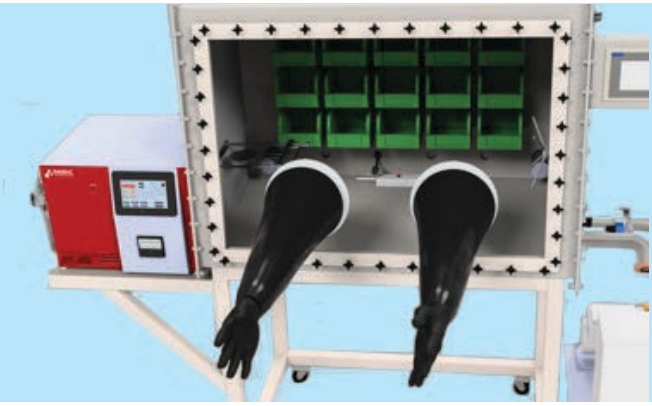
7" 16-bit color touchscreen HMI.

Analog pressure controller for quick pressure check and pulse monitoring.

6" SYSTEMS ALSO AVAILABLE! (AT610)



7" touchscreen display with complete control over operation of the tool, recipe generation and sensor date. Easy to use and robust control SW interface



Glovebox integration

A standard AT410 can be attached to a glove box with a glove box adapter upgrade. The system is sealed to an open side of a pre-existing or new glove box.

The deposition chamber and sample holder are completely sealed within the inert gas environment. Air sensitive materials and substrates can be handled and deposited with utmost confidence. 100% of the glove box floor and shelving will remain accessible after installation ALD system.

Vacuum handling

Our products from WHS® provide a comprehensive range of industry-leading vacuum wands designed for safe and efficient wafer handling in cleanroom environments. Our vacuum wands offer secure backside handling, ideal for a variety of wafer types, including silicon, glass, silicon carbide, fragile thin wafers, and compound wafers such as GaAs, InP, and GaN.

CORDLESS VACUUM WAND ASSEMBLY (WHS-V6)

This advanced technology cordless portable battery-powered vacuum wand allows independence from vacuum lines. Provides mobility to go anywhere in the cleanroom. The wireless smart charger base electronics keep the (owner replaceable) Lithium-Ion battery fully charged without the worry of damage from overcharg-ing. Designed for wafer rescue or light-production, ISO 3.

TABLE-TOP PORTABLE WAND (WHS-V7)

This advanced table-top portable battery-powered vacuum wand allows independence from in-house vacuum. The powerful vacuum pump, high performance battery and auto-shutoff holder allows this system to be used in a high production environment for multiple days on one charge. It ships with a choice of vacuum tip and small device adapter if needed. Designed for wafer rescue or heavy-production, 800mBar (23.6"Hg). ISO 3.

VACUUM WAND SETS (WHS-V2)

A prepackaged vacuum wand set that includes everything needed to start handling SEMI standard wafers or compound wafers safely using a house vacuum. Set includes: appropriate PEEK or Polyamide vacuum tip, vacuum wand, coil cord and holder.

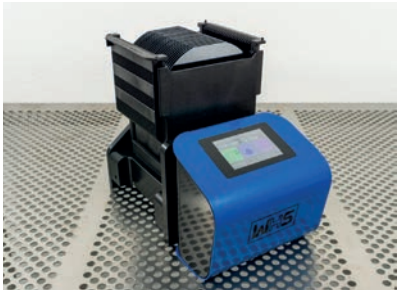
Vacuum wand set small device Included tip: Nitrile Buna-N Cup Variety Kit		**Vacuum wand set 150 - 200 mm** Included tip: WHS-V1-AP4NST		**Vacuum wand set 300 mm** Included tip: WHS-V1-AP6NST
	**Vacuum wand set 76 - 100 mm compound/thin** Included tip: WHS-V1-AP3CST		**Vacuum wand set 150 - 200 mm compound/thin** Included tip: WHS-V1-AP4CST	

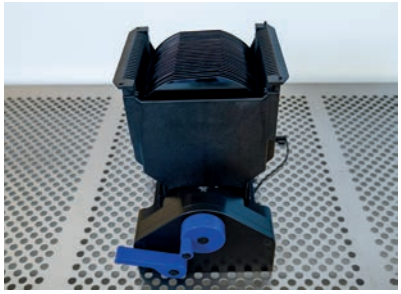
SMALL DEVICES (WHS-V8)

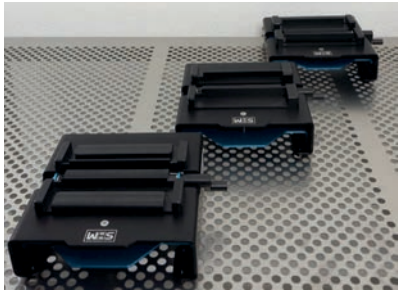
Antistatic conductive silicone rubber vacuum cups for high temperature applications, antistatic Nitrile Buna N rubber vacuum cups for general use application, or PUR® ultra silicone rubber non-marking vacuum cups for optic handling application. ISO 5.

Wafer alignment and presenting

Our full line of industry-leading semiconductor wafer flat and notch aligners, achieving high-accuracy alignment in under 15 seconds. These systems are built for cleanroom applications, emphasizing speed, accuracy, ergonomics, and low maintenance, and are compatible with most industry process and shipping cassettes. Our product line of presenters is designed to enhance operator efficiency and reduce the risk of wafer damage in cleanroom environments.







AUTOMATIC FLAT ALIGNER (WHS-A1)

Advanced technology automatic wafer flat aligner for alignment 76 mm up to 200 mm wafers. Engineered for InP, GaAs, GaN and SiC compound wafer handling. Features motorized stage for gentle lifting of compound wafers - protecting the wafer edge and increasing yields. ISO 3. Multisize model also available.

MANUAL FLAT ALIGNER (WHS-A2)

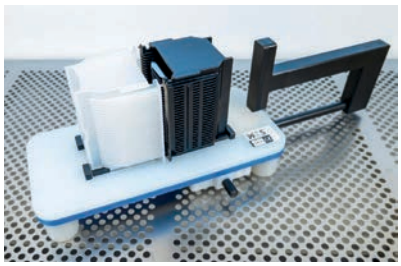
Advanced technology manual wafer flat aligner for top/bottom alignment of 76 mm to 150 mm wafers. Engineered for InP, GaAs, GaN and SiC compound wafer handling. Features spring loaded stage for gentle engagement of compound wafers with the roller - protecting the wafer edge and increasing yields; Ergonomic spin-knob and lever to reduce operator fatigue. ISO 4. Multisize model also available.

ECONOMY MANUAL FLAT ALIGNER WITH DUAL KNOB (WHS-A6)

An economical antistatic flat aligner for top/bottom alignment of 76 mm to 150 mm primary wafer flats. Features advanced abrasion resistant, static dissipative stage and roller materials. Low maintenance and long life. ISO 4.

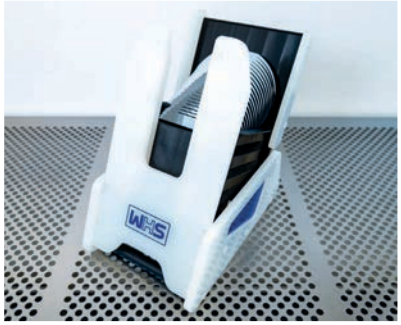
MANUAL WAFER TRANSFER (WHS-T3)

A precision manual horizontal bulk wafer slide transfer for safely transferring wafers between two SEMI compliant wafer cassettes. Compatible with high-and low-profile plastic process, metal cassettes and most shipping cassettes with an H-BAR. Features a smooth, service-free slide rail system engineered with advanced coated rods paired with UHMW bearing blocks. Antistatic, abrasion and chemical resistant materials. ISO 4.



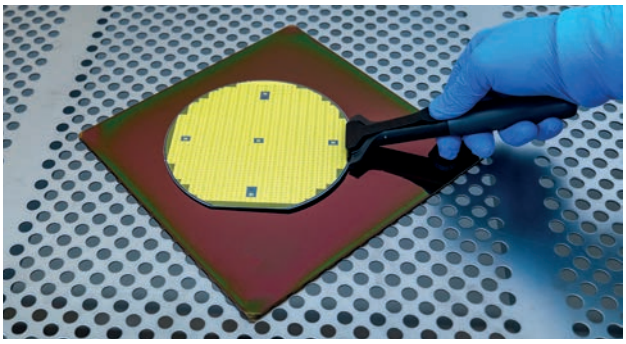
MANUAL WAFER ESCALATOR (WHS-P2)

A 25° angled antistatic table-top wafer presenter tool designed to present the wafer to the operator for wafer ID (laser mark) reading. It is available for 100 mm (4"), 150 mm (6") or 200 mm (8") diameter wafers. Performance materials used for abrasion resistance, Its unique double angle lift comb design eliminates edge chipping. Compatible with most SEMI standard 25 slot cassettes.



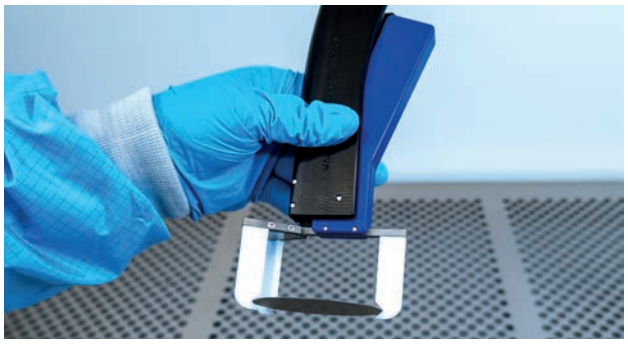
Wafer and photomask handling

WHS provides an extensive range of industry-leading wafer grippers designed to accommodate a variety of wafer handling needs in cleanroom settings. Each model is tailored to meet specific requirements for specialized wafer handling. Our next-generation lithography photomask handling tools are designed to minimize particle contamination, prevent electrostatic discharge (ESD), and improve ergonomics for technicians.



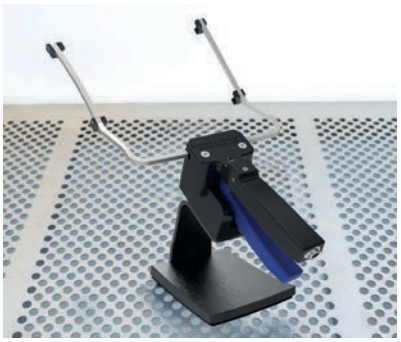
MECHANICAL WAFER PICK EDGE GRIP (WHS-G1 & WHS-G2)

A normally closed (consistent-force) edge exclusion mechanical pick for handling up to 200 mm round substrates from the wafer edge. The gripper material is ESD-safe PEEK for longevity, antistatic properties, and general chemical resistance. The wafer contact pad is a perfluoro elastomer strip for grip hold on the wafer without scratching or leaving out-gassing behind. ISO 4. Compound and thin wafer compatible. Two models available: with and without spatula.

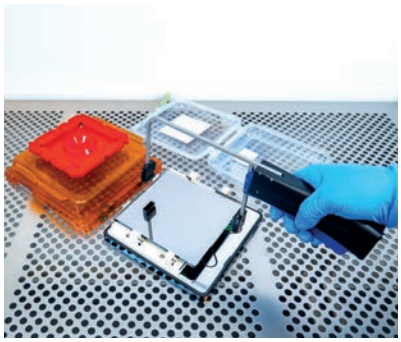


3-POINT MECHANICAL WAFER GRIPPER (WHS-G3)

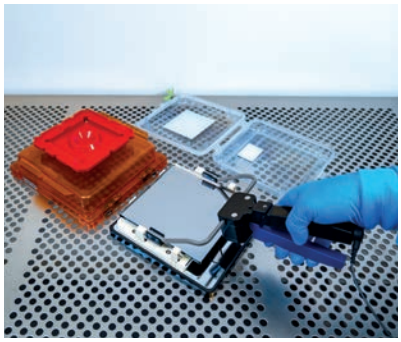
Designed for round substrates with diameters up to 300 mm, specifically targeting the tangential wafer diameter. This normally closed pick is suitable for both laboratory single wafer processing and wafer rescue applications. The 50 mm height grippers are crafted from high-performance PTFE Teflon®, ensuring resistance to chemicals and high temperatures. It is adjustable for thin/compound substrates. ISO 4. Optional table-top pedestal holder available.



WHS-L3 IEV mask grip



WHS-L2 Horizontal grip mask pick



WHS-L1 Side grip mask pick

MASK PICKS (WHS-L1, WHS-L2 & WHS-L3)

The WHS-L photomask handling series comprises three models, each designed for specific applications. The WHS-L1 has an encapsulated gearbox with synchronized grippers for precision handling of photomasks and reticles from the side tangential edge–ideal for scenarios where accuracy and minimal contact are essential. The WHS-L2 is designed for horizontal offset applications, providing flexibility when the WHS-L1 isn't suitable. The WHS-L3 is crafted for handling advanced Extreme Ultraviolet (EUV) masks, featuring four low-profile grippers that seamlessly interface with EUV reticle pods, ensuring stability and security. If you need a custom-engineered product, WHS can create a tailored solution to fit your exact needs.

Process boats and storage boxes

SPS offers a full line of wafer process boats, for safe and easy processing of 50 mm (2") up to 200 mm (8") wafers. These process boats are made to the industry standard designs. This also makes them suitable as drop-in replacement for your current process boats. These process boats are designed with open or closed slots. We offer our process boats in various materials options. Optional laser marking or other customizations are available.

Process boat conductive polypropylene
Available in 150 mm (6") and 200 mm (8")

Process boat PEEK
Available in 150 mm (6") and 200 mm (8")

Process boat PFA
Available in 50 mm (2") up to 200 mm (8")

Process boat polypropylene
Available in 50 mm (2") up to 100 mm (4")

WAFER PROCESS BOAT STORAGE BOXES

Designed for easy and safe storage of wafers. Available in 50 mm (2"), 75 mm (3"), 100 mm (4"), 150 mm (6") and 200 mm (8"). Our storage boxes are stackable. Material options are: conductive polypropylene, polypropylene & carbon fiber and carbon fiber.

RETICLE STORAGE CASES

Protect your assets with our high-quality reticle cases. Damage to your reticle could lead to a loss of opportunities and financially a negative impact. SPS carries a complete line of reticle cases for both Canon and Nikon steppers.

SMALL MOISTURE BARRIER BAG ESD 150 X 185 MM

Designed to provide superior protection for wafers and other components during transport and storage. Engineered to shield against moisture, static electricity, and particle contamination.

Wafer shipping

Device protection and contamination control begins at the wafer fab and extends to the assembly site. SPS-International never forgets that the most valuable product in the semiconductor and electronics industry is also the most fragile and susceptible to mishandling and contamination. Not all wafers are created equally: with back-grinding, unique material sets, and exotic semiconductor processes, one product does not fit all wafers. From the most advanced single wafer shippers to cost efficient wafer jars, we offer tailor fit products to meet your requirements.

SINGLE WAFER COIN STYLE SHIPPERS

Our single wafer coin style shippers are available in sizes 25 mm (1"), 38 mm (1.5"), 50 mm (2"), 63 mm (2.5"), 75 mm (3"), 100 mm (4"), 125 mm (5") and 150 mm (6") and in Natural PP or ESD-Safe Conductive PP materials. They are impact resistant with a screw-on lid for secure packing. Available from stock. Contact us for special requests!

WAFER SHIPPING BOXES

For 25 mm (1"), 50 mm (2"), 63 mm (2.5"), 75 mm (3"), 100 mm (4"), 125 mm (5"), 150 mm (6") and 200 mm (8") wafers. Designed to interface with automated equipment and hold multiple wafers by the edge.

WAFER JARS

Made from materials that ensure clear visibility, these jars allow for easy inspection without compromising the integrity of the wafers. Featuring liner foam, foam cushion disks, and separators, these jars create a multi-layered protective environment, essential for reducing the risk of damage during transit. Available in sizes from 100 mm (4"), up to 300 mm (12").

SINGLE FLEX FRAME SHIPPERS

Designed for 100 mm (4"), 125 mm (5"), 150 mm (6"), 200 mm (8") and 300 mm (12") wafers. Available in uncoated, anti-static coated or conductive PS materials.

HOOP RING SHIPPERS AND HOOP RINGS

Designed to hold single hoop ring assembly with wafer and tape. Available in proprietary conductive PS.
We also supply a full range of hoop rings, film frames and film frame shippers available from stock

esPRO® quartz baths

These esPRO® constant temperature-controlled baths are designed to be contaminant-free, rapid heating units suitable for wafer processing in wet etch, high temperature acid, and solvent application (excluding hydrofluoric acid). Manufactured using high purity fused quartz (minimum 99.9999% silica), these baths represent the standard of excellence and reliability for integrated circuit manufacturing processing.

FEATURES

- Fire polished quartz tanks minimize contamination and are corrosion and thermal shock resistant
- Molded construction to provide maximum strength and eliminates sharp corners
- Rugged construction assures structural support and fume-tight integrity
- Reduced warm up time and longer lasting due to engineered-in safety concerns
- Each vessel includes a bottom well to accommodate a stirrer or drain
- No temperature sensors or elements contact the process
- Use of dual thermodiscs independent of the controller thermocouples guarantees power shutdown
- High temperature, fire retardant wiring used through all baths
- Unique lip flange design eliminates fume migration and liquid leaks into the heating element
- Custom design flexibility

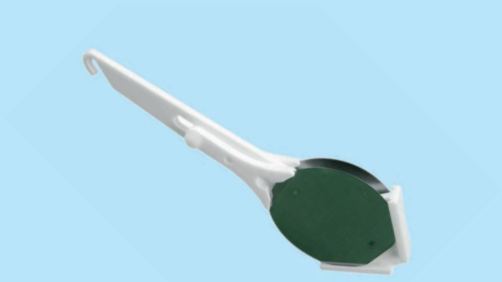
OPTIONS:

- Drain port
- Additional type J thermocouple
- Recirculation and custom models available

SUBSTRATE DIPPER

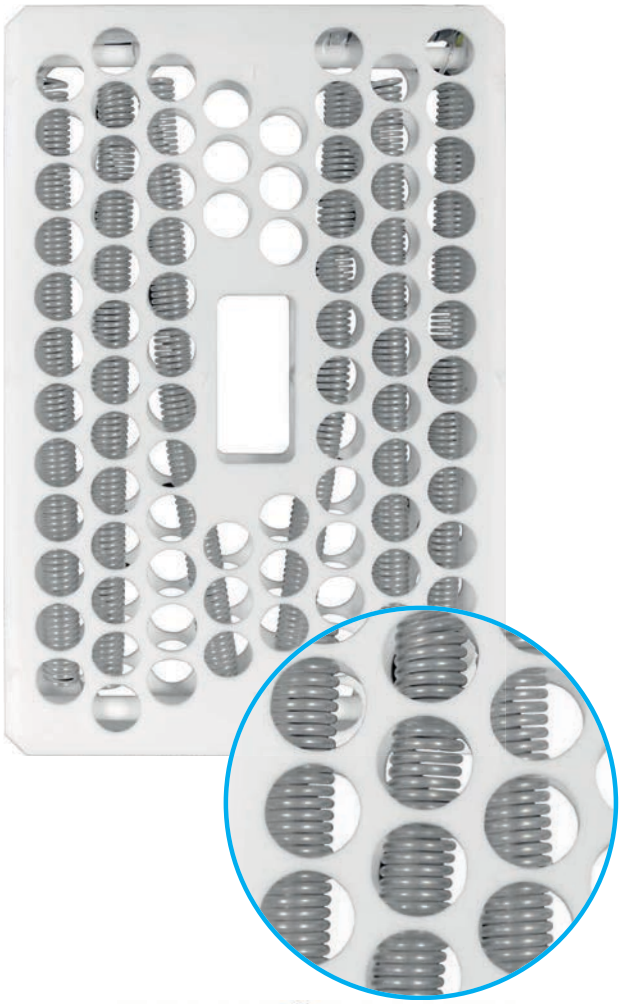
These PTFE wafer dippers are non-contaminating and completely inert to highly corrosive reagents. They are non-wettable, heat resistant and easy to clean.

- Can hold up to 2 square or round substrates
- Dipper has a “V” shaped groove
- Easy slide function for use of multiple sizes substrates
- Chemically resistant to acids and bases
- Ultra-pure
- Also available in NPP



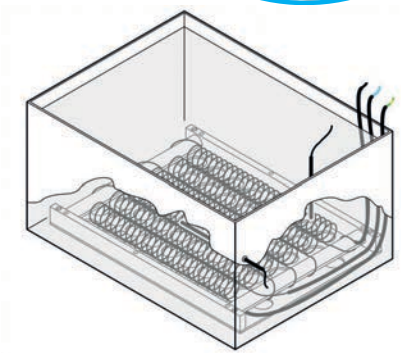
esPRO® immersion heaters

The esPRO® Immersion heater series heats liquids at a constant temperature. They are ideal for use in the semiconductor, pharmaceutical, and biomedical industries. These compact heaters are designed to integrate easily into PVDF, PFA and quartz process tanks. They safely, evenly and efficiently heat acids, bases, DI water and other noncombustible liquids up to 180°C.



ALL OUR IMMERSION HEATERS INCLUDE THE FOLLOWING FEATURES:

- Ultrapure PFA (Teflon®) wetted surfaces
- Reliable heating of harsh chemicals
- Efficient and even, clean heating
- Compact design: maximum power in a small footprint
- SEMI S3, CE & UL compliant
- Low Watt density; ≤ 4 Watts/in^2
- Ground wire with tantalum or platinum tip
- Various types of temperature sensors available
- Fully customizable to fit your needs



DURABLE HEATERS WITH FAST TEMPERATURE RESPONSE TIME

The heat source is placed in the fluid to reduce heat loss. The heater's low mass and large surface area provide the fastest temperature response time. This system also offers the most comprehensive safety package with redundant interlocks that are integrated into every system. These rugged and durable heaters come in frame designs, with outputs of 1.0 to 40.0 kW.

FLEXIBLE AND CUSTOM CONFIGURATIONS

In addition to our standard configurations, the esPRO® immersion heaters are also available in custom builds to meet your requirements. We can arrange a wide range of custom sizes, wattages, and voltages available, please contact us for all options!

LOOKING FOR A DIFFERENT HEATER? WE ALSO HAVE INLINE HEATERS AND TANK HEATERS AVAILABLE!

esPRO® photoresist filtration

Photoresist filters are essential for removing contaminants from photoresist solutions, ensuring high-purity and defect-free coatings. These filters prevent particle-induced defects in microfabrication processes, enhancing the quality and reliability of semiconductor devices. They are designed for compatibility with various photoresist chemistries and provide consistent, reliable performance in cleanroom environments.

N6/N66 SERIES & NN6/ NN66 SERIES

N6/N66 series filter cartridges are made of nylon microporous membrane and processed by advanced fusion welding process. NN6/NN66 series filter cartridge adopts a nylon membrane as filter medium. The support, drainage, inner core, cage, endcaps are all made of nylon material. This makes it more resistant to high temperature and solvents.

PF1/HPF1 SERIES

Hydrophobic PF1 filter cartridges are characterized by inherent hydrophobicity, high flow rate, high filtration accuracy, no fiber shedding, chemical resistance, high temperature resistance and long service life. Hydrophilic HPF1 filter cartridges are characterized by strong hydrophilicity, high flow rate, high filtration accuracy, no fiber shedding, chemical resistance, high temperature resistance, no need for pre-wetting, dry storage.

GF/GP/GN SERIES

This series uses glass microfiber or glass microfiber with either PP or nanofiber as filter medium, which features high absorption and high efficiency. The multi-layer gradient membrane structure has high contamination loading capacity, especially suitable for gels, condensed blocks and other impurities.

CFPR CAPSULE FILTERS

CFPR series is designed to remove particles generated during the use of photoresist and improve product yield. It has a compact space structure, which reduces the residual material and liquid, and the integral design makes the replacement safer and faster. Suitable for filtering in small flow occasions. There are a variety of materials to choose from.

PF3 015 SERIES

PF3 015 series filter cartridges are ideal for organic solvents (benzene, dimethylbenzene), corrosive fluids and wet process chemicals, with extremely low extractable. This Photoresist filter has been designed specifically to filter point-of-use photoresist.

PP3/PP3N/PP3H SERIES

Continuously graded pore structure and multi-layer filter media. High contaminant loading capacity and long service life. Specially designed for suspended particulate, colloids and high viscosity fluids.

THREE-HOLE LITHOGRAPHY CAPSULE FILTER

The CFTH series is especially suitable for flat panel and lithography applications. The CFTH series provides critical particle removal performance for pigment-dispersed color resists.

Innovative products for semiconductor processes

For over 35 years SPS-International has offered quality products and services as a one-stop shopping point for the semiconductor and life science industry. We supply a range of industry leading products used worldwide for wafer handling & automation / wet process & CMP / photolithography & thin film and OEM replacement parts.

Dedication towards our customers and flexibility in finding the right solution, combined with solid application knowledge and fast supply logistics, are the keywords of our service. SPS-International is a full-service manufacturing and stocking distributor offering full-time service engineering support.

SPS Europe B.V.
Midden Engweg 41
3882 TS Putten
The Netherlands
Tel.: (+31) 341 360 590

SPS Germany (Ingolstadt)
Ferdinand-Braun-Strasse 16
D-85053 Ingolstadt
Germany
Tel.: (+49) 841 370 530

SPS Germany (Hamburg)
GaußStraße 5
D-22765 Hamburg
Germany
Tel.: (+49) 171 26 29 173

SPS United Kingdom
49 Jamaica Street
Liverpool, L1 0AH
United Kingdom
Tel.: (+44) 1750 725 712

SPS France
40, rue Condorcet
38090 Vaulx-Milieu
France
Tel: (+33) 4 58 17 12 83

SPS Italy
Via Pietro Mascagni 31
20122 Milano
Italy
Tel.: (+39) 3 457 357 177

SPS America - West
16064 SE Engert Ridge Dr
Damascus Oregon 97089
USA
Tel.: (+1) 503 502 5722

SPS America - East
Boston, Massachusetts
USA
Tel.: (+1) 781 799 8047

SPS Asia
10 Ubi Crescent
Ubi Techpark Lobby B, #06-18
Singapore 408564
Tel.: (+65) 911 30 172