

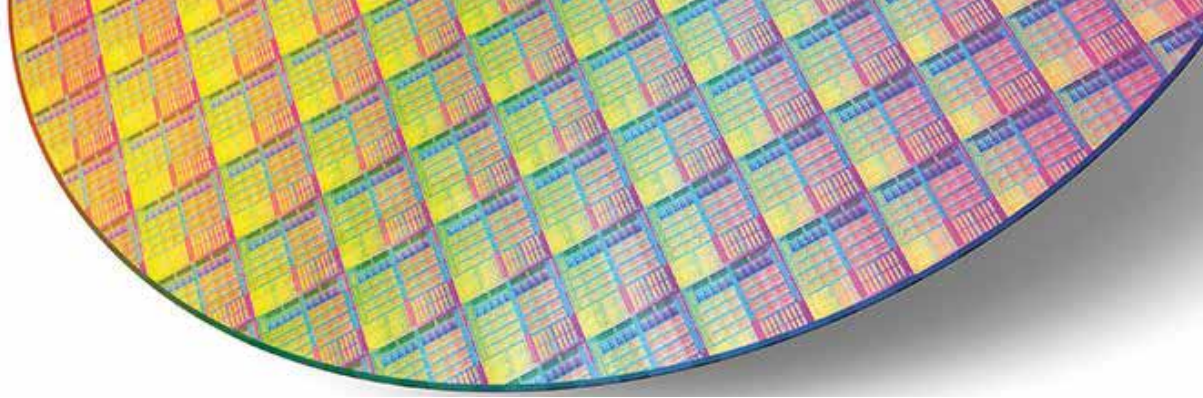
SUSS MICROTEC

COMPANY PROFILE & PRODUCT PORTFOLIO



SUSS MICROTEC





With more than 70 years of engineering experience SUSS MicroTec is a leader in enabling advanced backend and photomask solutions in the semiconductor industry and related markets. Our portfolio covers a comprehensive range of imaging, coating and bonding systems as well as photomask equipment.

SUSS MicroTec provides cost-effective solutions with unsurpassed quality and cutting-edge technology, enabling our customers to maximize yield at high throughput and thus reducing cost of ownership.

In close cooperation with research institutes and industry partners SUSS MicroTec contributes to the advancement of next-generation technologies such as 3D integration and imprint lithography as well as key processes for WLP, MEMS and LED manufacturing. With its global infrastructure for applications and service SUSS MicroTec supports more than 8,000 installed systems worldwide.

PHOTOMASK SOLUTIONS

ADVANCED BACKEND SOLUTIONS

- + Imaging Systems
- + Coating Systems
- + Bonding Systems

Segments

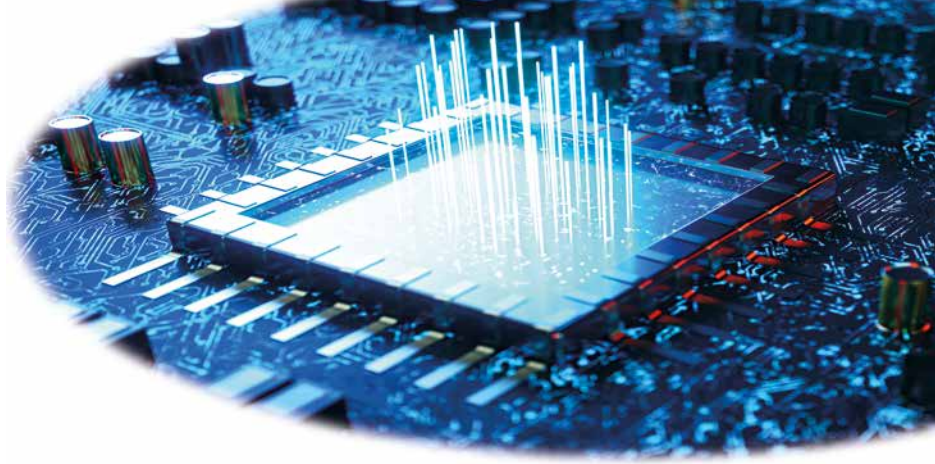
Frontend	Advanced Backend		
Photomask Solutions	Advanced Backend Solutions		
			

Products and Process Steps

Photomask Equipment	Imaging Systems	Coating Systems	Bonding Systems
<ul style="list-style-type: none"> + Photomask Cleaning + Bake / Develop + Metrology 	<ul style="list-style-type: none"> + Proximity Exposure (Mask Aligner) + Imprinting + Metrology + UV Projection (Scanner) 	<ul style="list-style-type: none"> + Coating / Developing + Inkjet Printing + Metrology 	<ul style="list-style-type: none"> + Bond Alignment + Permanent Bonding + Temporary Bonding + Debonding + Metrology

SUSS MICROTEC – EVERYWHERE IN LIFE





ADVANCED PACKAGING

The consumer's constant push for higher functionality on smaller and thinner end devices – like smartphones, tablets or IoT – drives the need for next-generation packages with finer features and smaller form factor at increasing complexity of the package. Today a wide variety of **advanced packaging** technologies exist to meet the requirements of the semiconductor industry. The leading advanced packages include flipchip, WLCSP, FOWLP and 2.5 / 3D packaging.

SUSS MicroTec offers equipment and process solutions for all packaging platforms.

This includes lithography equipment to pattern RDL, TSV structures, flipchip bumps like copper pillar, and more. SUSS MicroTec's temporary bonding and debonding equipment enables processing of ultra-thin device wafers for leading edge 2.5 / 3D applications.

MEMS

MEMS (Microelectromechanical Systems) are key components in many automotive, industrial, medical, aerospace and consumer applications. MEMS sensors are used in anything from automotive, smartphones to medical testing. The applications seem unlimited. MEMS are everywhere.

Although based on commonly used silicon wafer processing, the manufacturing of MEMS devices requires highly specialized equipment to create mechanical structures that are a fraction of the width of a human hair. Highly flexible exposure and coating systems as well as wafer bonding equipment are essential in the processing of MEMS. From the start of volume manufacturing of MEMS products, SUSS MicroTec has been supplying equipment to the MEMS industry world-wide.

LED

LEDs (Light Emitting Diodes) are based on compound semiconductors (III-V) and widely used in optoelectronic devices, consumer electronics such as tablets and mobile phones, automotive and general lighting applications.

The manufacturing of LED devices requires dedicated equipment at lowest cost of ownership for this price-sensitive market. SUSS MicroTec provides exposure, coating, developing and wafer bonding equipment that handles fragile and highly warped wafers, deals with rough surfaces and provides best throughput for high-volume manufacturing.

Imprint technologies are offered to manufacture specific layers for further light extraction efficiency.





PHOTOMASK EQUIPMENT	
PROCESS STEPS	TECHNOLOGIES
Bake	<ul style="list-style-type: none"> + 25-Zone Controlled Post Exposure Bake + CD Profile Bake + Automated Optimization Routine to Define the Hotplate Program
Develop / Etch	<ul style="list-style-type: none"> + Low Impact ASONIC® Develop Process + Fan Spray Develop Process + Positive and Negative Tone Resists + Fan Spray Etch Process
Clean	<ul style="list-style-type: none"> + 172 nm UV Surface Preparation + In situ UV Process + Advanced High Frequency Megasonics + Nano Binary Droplet Spray + Ambient Plasma for Surface Preparation and Restoration + High Temperature Surface Treatment + EUVL Compliant Automation + EUV Sidewall Cleaning + TranSonic
Metrology	<ul style="list-style-type: none"> + Pre Clean Defect Inspection + Post Clean Defect Inspection

LITHOGRAPHY / PATTERNING	
PROCESS STEPS	TECHNOLOGIES
Wafer Handling	<ul style="list-style-type: none"> + Thin Wafer Handling + Warped Wafer Handling + Edge Handling + Taiko Wafer Handling
Spin Coating	<ul style="list-style-type: none"> + GYRSET® and /or Open Bowl + Thin and Thick Resists and Adhesive Systems + Planarization + EBR + BCB + Polyimide/PBO
Spray Coating	<ul style="list-style-type: none"> + High Topographies up to 600 µm and more + Via Holes + KOH Etched Cavities + V-Grooves and Trenches + Lenses
Inkjet Printing	<ul style="list-style-type: none"> + Digital and Additive Patterning + Masking Resists + Solder Mask Coating + Conductive Interconnects + Isolation and Passivation Coatings + Stress Buffers + Adhesives + Trench Filling
Baking / Cooling	<ul style="list-style-type: none"> + Proximity
Developing	<ul style="list-style-type: none"> + Positive and Negative Tone Resists + Front and Backside Rinse + Fan Spray + Binary Spray & Puddle + Puddle + Megasonic
Metrology	<ul style="list-style-type: none"> + Automated Tool Qualification + EBR/Edge Coat Measurement + Post Coat Film Thickness Measurement + Post Develop Defect Inspection



LITHOGRAPHY / PATTERNING	
PROCESS STEPS	TECHNOLOGIES
Wafer Handling	<ul style="list-style-type: none"> + Thin Wafer Handling + Warped Wafer Handling + Fragile Wafer Handling + Edge Handling
Alignment	<ul style="list-style-type: none"> + Top-side Alignment + Bottom-side Alignment + Infrared Alignment + Optical Pattern Recognition + Non-contact Pre-Alignment
Proximity Exposure	<ul style="list-style-type: none"> + UV LED Exposure + Diffraction Reducing Optics + Large Gap Exposure + High Resolution Exposure + UV250–UV400 Exposure Systems + High Uniformity Exposure + Customized Illumination
Projection Exposure	<ul style="list-style-type: none"> + Full-field Continuous Scanning + Stitching-free Exposure + Magnification Correction + Beam Steering + Recipe Selectable NA + Recipe Selectable Wavelength
Imprint Lithography	<ul style="list-style-type: none"> + SUSS MicroTec Imprint Lithography Equipment (SMILE)
Metrology	<ul style="list-style-type: none"> + Front-to-backside Target Alignment + Overlay Measurement + Surface-to-subsurface Target Alignment (IR)

WAFER BONDER	
PROCESS STEPS	TECHNOLOGIES
Wafer Handling	<ul style="list-style-type: none"> + Thin Wafer Handling + Warped Wafer Handling + Fragile Wafer Handling + Edge Handling + Aligned Wafer Handling
Bond Alignment	<ul style="list-style-type: none"> + Top-side Alignment + Bottom-side Alignment + Inter-substrate Alignment + Infrared Alignment
Permanent Bonding	<ul style="list-style-type: none"> + Hybrid and Fusion Bonding + Metal Diffusion Bonding + Eutectic and SLID Bonding + Glass Frit Bonding + Anodic Bonding + Adhesive Bonding + Impulse Current Bonding (ICB)
Plasma Activation	<ul style="list-style-type: none"> + Plasma Activation for Fusion Bonding + Full Surface Activation
Cleaning	<ul style="list-style-type: none"> + Aqueous Cleaning + Solvent Cleaning + Megasonic Cleaning
Temporary Bonding/ Debonding	<ul style="list-style-type: none"> + Supporting Various Temporary Bond Materials and Processes + Mechanical and Laser Release
Metrology	<ul style="list-style-type: none"> + Multipoint Overlay Verification + Bond Void Defect Inspection + Surface Defect Inspection + Surface Topography & Coplanarity + Post Coat Adhesive Thickness & TTV + Post Bond Adhesive Thickness & TTV



PHOTOMASK EQUIPMENT

HMx Square

Manual system
3 μ m - 250 nm hp

- + Stripping / Cleaning
- + Developing
- + Etch Photomask Processing



ASx Series

Automated system
down to 65 nm

- + Baking (< 14 nm)
- + Stripping / Cleaning
- + Developing
- + Etching



MaskTrack smart BD

Automated system 193i and EUVL

- + EUVL & 193i Photomask Bake & Develop Processing
- + Continuous AI-Based Analysis and Prediction
- + EUVL Photomask Automation
- + Low Contact Substrate Handling

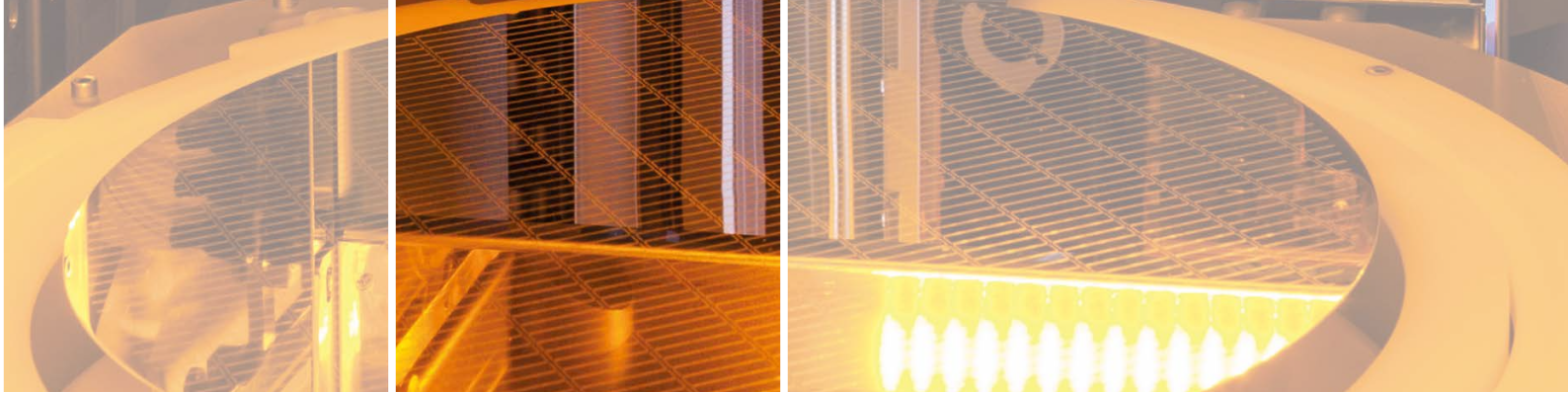


MaskTrack Pro/X

Automated system 193i 2x/1x, EUVL

- + EUV und 193i Photomask Cleaning
- + EUV Photomask Automation
- + Photomask Baking & Developing





COATING/DEVELOPING SYSTEMS

LabSpin® 6/8

Manual system
up to 200 mm

- + Spin Coating
- + Aqueous Puddle
Developing



HP8/CP8/VP8

Manual system
up to 200 mm

- + Baking / Cooling
- + Vapor Priming



RCD8

Manual system
up to 200 mm

- + Spin Coating
- + Puddle Developing
- + Aqueous Spray Developing
- + Aqueous Binary
Spray Developing



AS8

Manual system
up to 300 mm

- + Spray Coating



SD12

Manual system
up to 300 mm

- Solvent Processes
- + Puddle / Spray Developing
 - + Binary Spray Developing
 - + High Pressure Cleaning
 - + Megasonic Cleaning

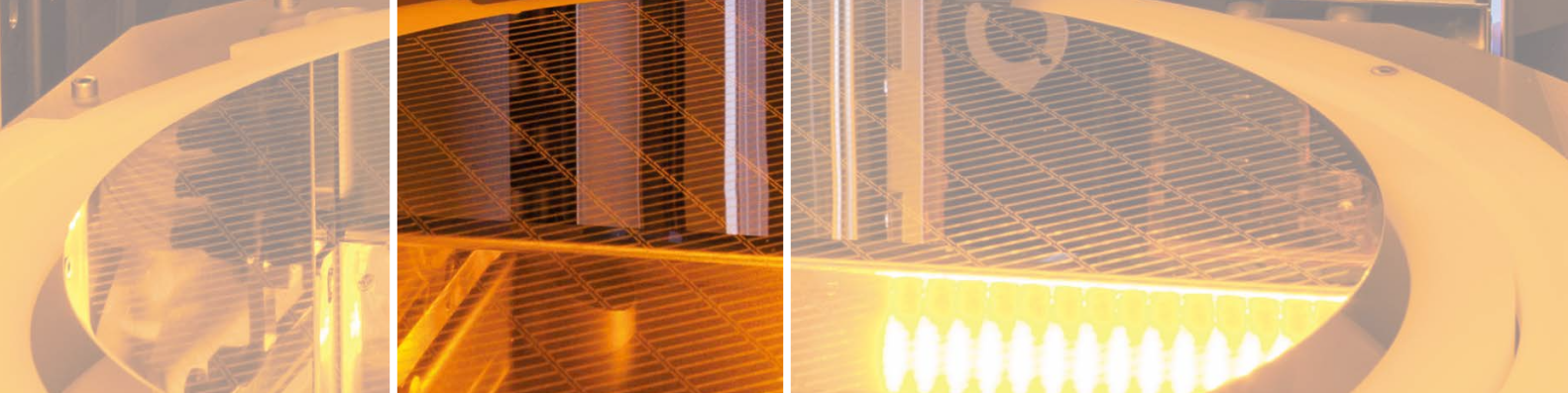


AD12

Manual system
up to 300 mm

- Aqueous Processes
- + Puddle / Spray Developing
 - + Binary Spray Cleaning
 - + High Pressure Cleaning
 - + Megasonic Cleaning





COATING/DEVELOPING SYSTEMS

MCS8

Manual system
up to 200 mm

- + Priming
- + Spin Coating
- + Spray Coating
- + Baking / Cooling
- + Aqueous / Solvent
Developing
- + Inkjet Printing



ACS200 Gen3

Automated system
up to 200 mm

- + Priming
- + Spin Coating
- + Spray Coating
- + Baking / Cooling
- + Aqueous / Solvent
Developing
- + Integrated Metrology
Module



ACS200 Gen3 TE

Automated system
up to 200 mm

- + Priming
- + Spin Coating
- + Spray Coating
- + Baking / Cooling
- + Aqueous / Solvent
Developing
- + Integrated Metrology
Module
- + Inkjet Printing

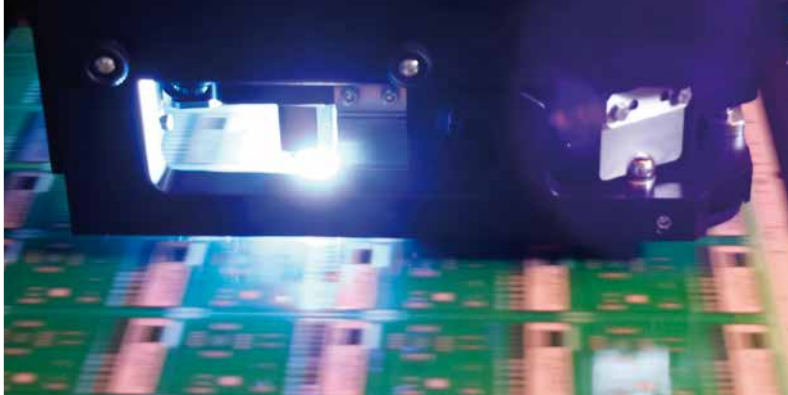


ACS300 Gen2

Automated system
up to 300 mm

- + Priming
- + Spin Coating
- + Spray Coating
- + Baking / Cooling
- + Aqueous / Solvent
Developing
- + Integrated Metrology
Module





INKJET PRINTER

LP50

Manual system
up to
227 mm x 327 mm

- + Digital and Additive Patterning
- + Functional Material Printing
- + Mask Printing



JETx

Automated system
up to 610 mm x 915 mm
(24 x 36 inches)

- + Digital and Additive Patterning
- + Functional Material Printing
- + Mask Printing

Also available as a specific configuration for Solder Mask Coating



METROLOGY SYSTEMS

DSM8 Gen2

Semi-automated system
up to 200 mm

- + Double-sided Overlay Measurement Equipment
- + Front-to-back Alignment Metrology

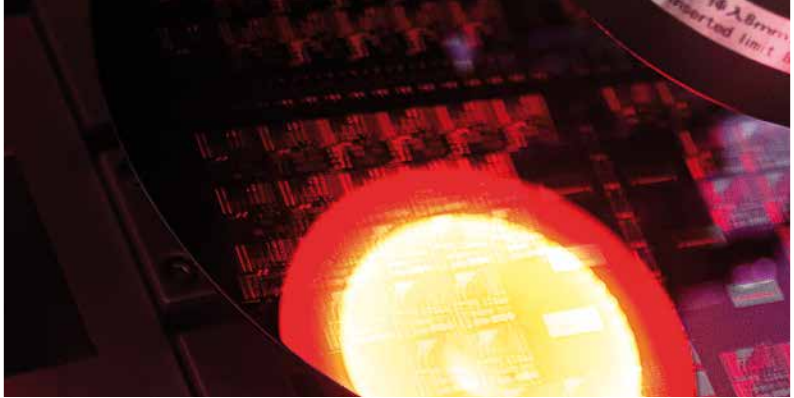


DSM200 Gen2

Automated system
up to 200 mm

- + Double-sided Overlay Measurement Equipment
- + Front-to-back Alignment Metrology





MASK ALIGNER (PROXIMITY EXPOSURE)

MJB4

Manual system
up to 100 mm

- + Mask Alignment
- + Exposure
- + Nanoimprinting



MA8 Gen5

Semi-automated system
up to 150 mm / 200 mm

- + Micro- and Nanoimprinting
- + Mask and Bond Alignment
- + UV Bonding
- + Fusion Bonding



MA/BA Gen4 Series

Semi-automated system
up to 150 mm / 200 mm

- + Mask and Bond Alignment
- + Exposure
- + Fusion Bonding
- + Micro- and Nanoimprinting

Also available as BA Gen4 configuration

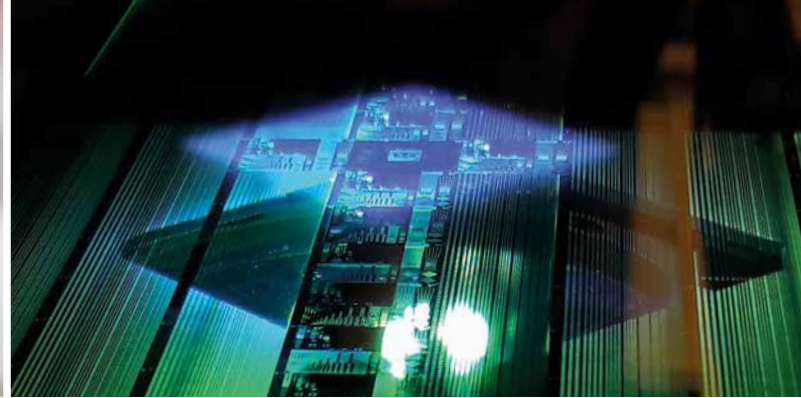


MA12 Gen3

Semi-automated system
up to 300 mm

- + Mask Alignment
- + Exposure
- + Micro- and Nanoimprinting





MASK ALIGNER (PROXIMITY EXPOSURE)

MA100/150e Gen2

Automated system
up to 150 mm

- + Mask Alignment
- + Exposure



MA200 Gen3

Automated system
up to 200 mm

- + Mask Alignment
- + Exposure



MA300 Gen3

Automated system
up to 300 mm

- + Mask Alignment
- + Exposure



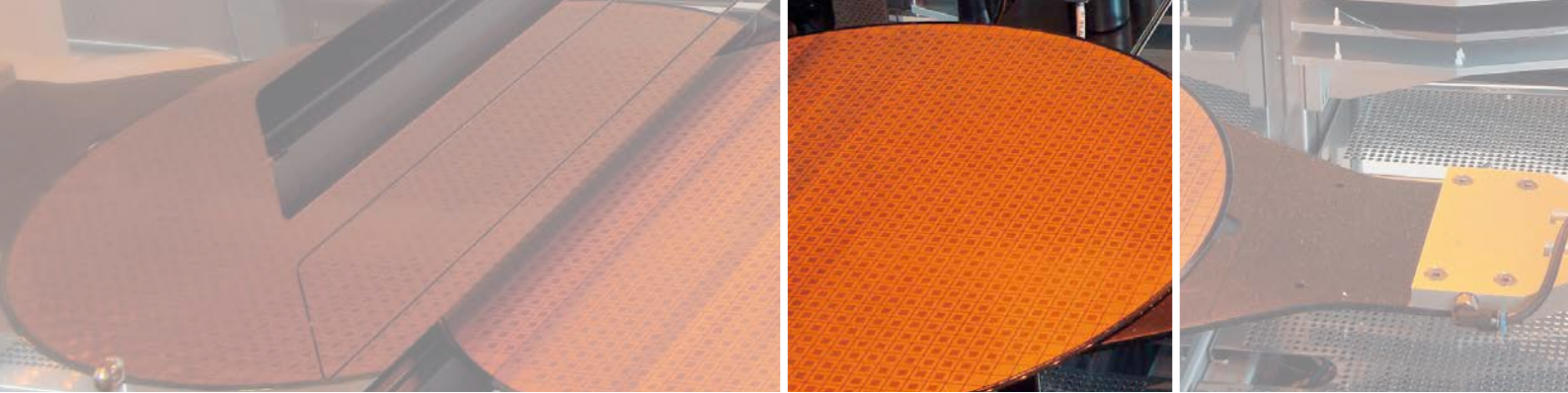
UV SCANNER (PROJECTION EXPOSURE)

DSC300 Gen3

Automated system up to 300 mm

- + Alignment
- + Full-Field Scanning Projection





WAFER BONDING SYSTEMS

XB8

Semi-automated system
up to 200 mm

+ High-Force Wafer Bonding



DB12T

Semi-automated system
up to 300 mm

+ Mechanical Debonding



SB6/8 Gen2

Semi-automated system
up to 200 mm

+ Wafer Bonding



LD12

Semi-automated system
up to 300 mm

+ Excimer Laser-Assisted
Debonding





WAFER BONDING SYSTEMS

XBS200

Automated system
up to 200 mm

- + High-Force
Wafer Bonding
- + Bond Alignment
- + Fusion Bond Option
- + Laser Pre-Bond
Option
- + Integrated Metrology
Module



XBS300

Automated system
up to 300 mm
(Temporary Bonding
Platform)

- + Adhesive and Release
Layer Coating
- + Plasma Release Layer
Deposition
- + Temporary Wafer
Bonding
- + Thickness and TTV
Measurement



XBS300

Automated system
up to 300 mm
(Hybrid Bonding
Platform) for D2W
and W2W applications

- + Bond Alignment
- + Fusion Bonding
- + Integrated
Metrology Module
- + Carrier Detach
Option



XBC300 Gen2

Automated system
up to 300 mm
(Wafer or Wafer on
Tape Frame)

- + Excimer
Laser-Assisted
Debonding
- + Mechanical
Debonding
- + Cleaning
- + Integrated Metrology
Module



NORTH AMERICA

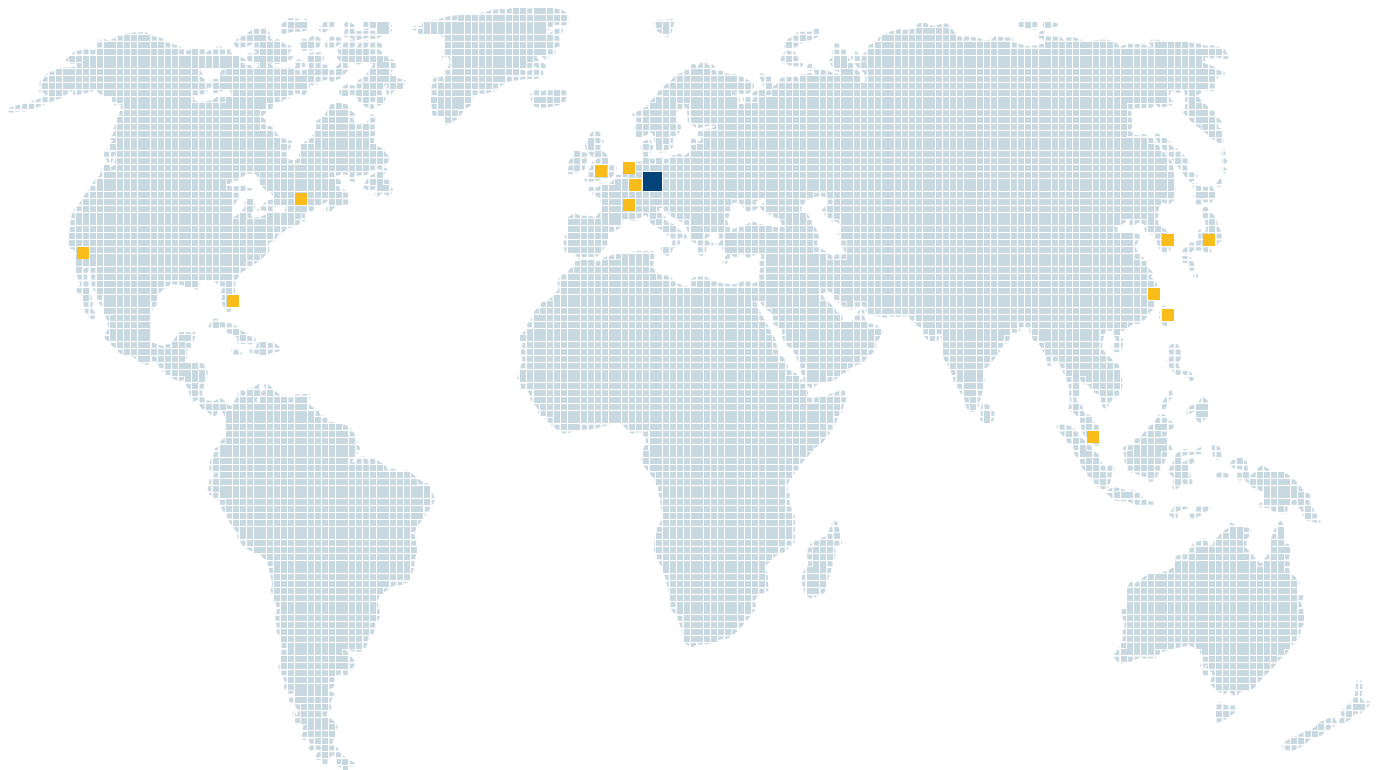
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