

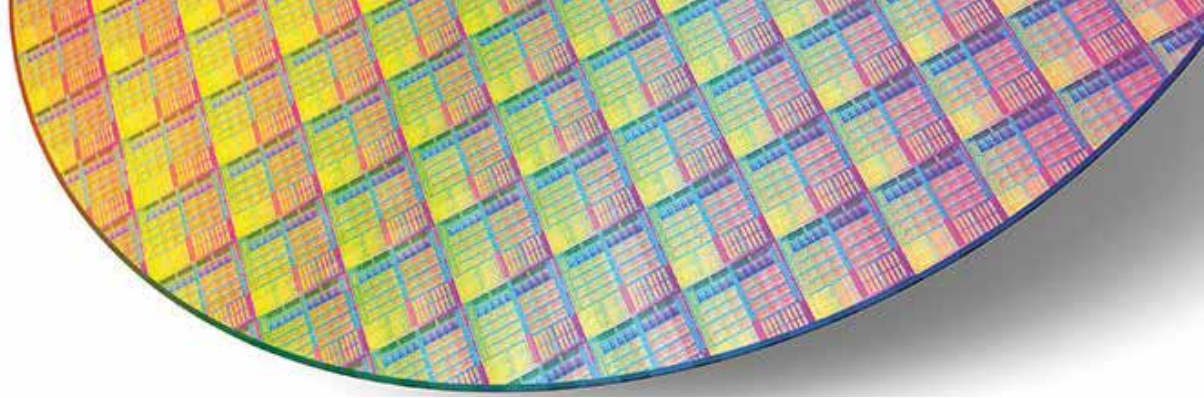


SHAPING THE FUTURE

SUSS MicroTec PRODUCT PORTFOLIO







SHAPING THE FUTURE

With more than 60 years of engineering experience SUSS MicroTec is a leading supplier of process equipment for microstructuring in the semiconductor industry and related markets. Our portfolio covers a comprehensive range of products and solutions for backend lithography, wafer bonding and photomask processing, complemented by micro-optical components.

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

LITHOGRAPHY SYSTEMS

- + Proximity Lithography
- + Projection Lithography
- + Coating/Developing
- + Imprint Lithography

LASER PROCESSING SYSTEMS

- + Laser Ablation
- + Debonding
- + Via/RDL Creation
- + Seed Layer Removal

WAFER BONDING SYSTEMS

- + Permanent Wafer Bonding
- + Temporary Wafer Bonding
- + Debonding

PHOTOMASK EQUIPMENT

- + Cleaning Platforms
- + Bake/Develop Systems
- + EUVL Reticle Handling & Inspection



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 and flipchip bumps like copper pillar. SUSS MicroTec's temporary bonding and debonding equipment enables processing of superthin 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 gaming, smartphones, medical testing to satellites. 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 worldwide.

LED

LEDs (Light Emitting Diode) 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.

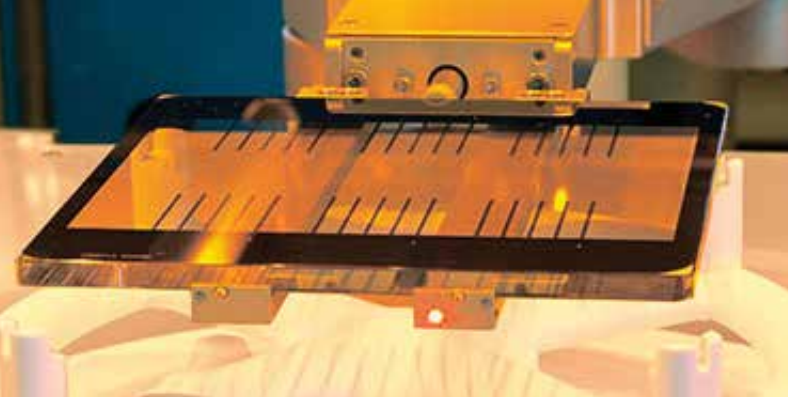
Imprint technologies are offered to manufacture specific layers for further light extraction efficiency.





PROCESS STEPS	TECHNOLOGIES
PHOTOMASK EQUIPMENT	
Bake	+ 25-Zone Controlled Post Exposure Bake + CD Profile Bake + Mirror Bake
Develop / Etch	+ Low Impact ASONIC® Develop Process + Fan Spray Develop Process + Fan Spray and Puddle Etch Process
Clean	+ 172 nm UV Surface Preparation + Insitu UV + Advanced MegaSonics + Nano Binary + Soft RTP + High Temperature Decontamination + EUV Dual Pod Handling and Cleaning
LITHOGRAPHY / PATTERNING	
Spin Coating	+ Thin and Thick Resists and Adhesive Systems + Planarization + BCB + Polyimide
Spray Coating	+ High Topographies up to 600 µm and more + Via Holes + KOH Etched Cavities + V-Grooves and Trenches + Lenses
Baking / Cooling	+ Contact + Proximity + Edge Handling
Alignment	+ Top-side Alignment + Bottom-side Alignment + Infrared Alignment + Optical Pattern Recognition + Non-contact Pre-Alignment
Proximity Lithography	+ Diffraction Reducing Optics + Large Gap Exposure + UV250 – UV400 Exposure Systems + Customized Illumination
Projection Lithography	+ Scan + Step & Repeat + Step & Scan + Large Area Projection
Laser Ablation	+ Excimer Laser
Laser Drilling	+ Excimer Laser
Laser Seed Layer Removal	+ Excimer Laser

PROCESS STEPS	TECHNOLOGIES
LITHOGRAPHY / PATTERNING	
Imprint Lithography	+ UV-Nanoimprint Lithography (UV-NIL) + Substrate Conformal Imprint Lithography (SCIL) + SUSS MicroTec Imprint Lithography Equipment (SMILE)
Lift-off	+ Puddle Nozzle + Fan Spray + High Pressure Nozzle + Recirculation + Aqueous and Solvent Processes
Developing	+ Positive and Negative Tone Resists + Front and Backside Rinse + Fan Spray + Binary Spray + Puddle Nozzle
Cleaning	+ Aqueous Cleaning + Solvent Cleaning + Megasonic Cleaning + Dual Wafer Ultrasonic Cleaning
Metal Oxide Removal	+ Formic Acid Vapour Cleaning Prior to Bonding
Wafer Handling	+ Thin-wafer Handling + Warped-wafer Handling + Fragile-wafer Handling + Edge Handling
WAFER BONDER	
Wafer Handling	+ Thin-wafer Handling + Warped-wafer Handling + Fragile-wafer Handling + Edge Handling
Plasma Activation	+ Plasma Activation for Fusion Bonding + Full Surface Activation + Selective Activation
Bond Alignment	+ Top-side Alignment + Bottom-side Alignment + Infrared Alignment
Permanent Bonding	+ Hybrid and Fusion Bonding + Metal Diffusion Bonding + Eutectic and SLID Bonding + Glass Frit Bonding + Anodic Bonding + UV Bonding + Adhesive Bonding
Temporary Bonding / Debonding	+ Supporting Various Temporary Bond Materials and Processes + Chemical, Mechanical and Laser Release



PHOTOMASK EQUIPMENT

HMx Square

Manual system
3 μm - 250 nm hp

- + Strip / Clean
- + Develop
- + Etch Photomask Processing



MaskTrack Pro

Automated system
193i 2x / 1x,
EUVL and NIL

- + Photomask Cleaning
- + Template Cleaning
- + Develop
- + Bake
- + EUV Photomask and Dual Pod Management



ASx Series

Automated system
down to 65 nm

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



COATING / DEVELOPING SYSTEMS

LabSpin6 / 8

Manual system
up to 200 mm

- + Spin Coating
- + Puddle Developing



RCD8

Manual system
up to 200 mm

- + Spin Coating
- + Puddle Developing

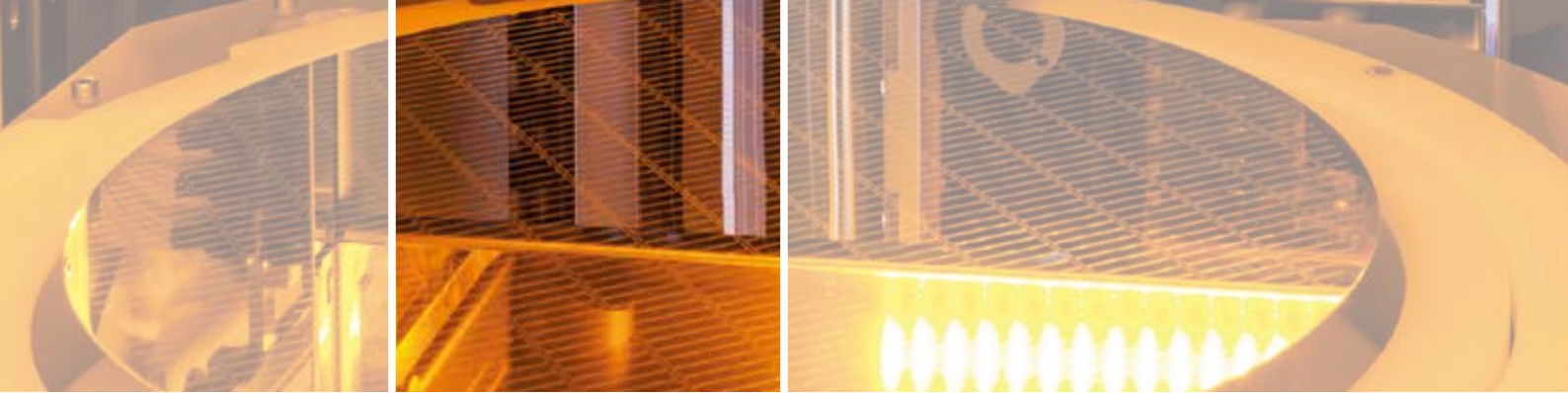


HP8 / CP8 / VP8

Manual system
up to 200 mm

- + Baking / Cooling
- + Vapor Priming





COATING / DEVELOPING SYSTEMS

AS8 / 12

Manual system
up to 300 mm

- + Spray Coating



ACS200 Gen3

Automated system
up to 200 mm

- + Priming
- + Spin Coating
- + Spray Coating
- + Baking
- + Aqueous / Solvent Developing



AD12

Manual system
up to 300 mm

Aqueous Processes

- + Puddle / Spray Developing
- + Wafer Cleaning



ACS300 Gen3

Automated system
up to 300 mm

- + Priming
- + Spin Coating
- + Baking
- + Aqueous / Solvent Developing



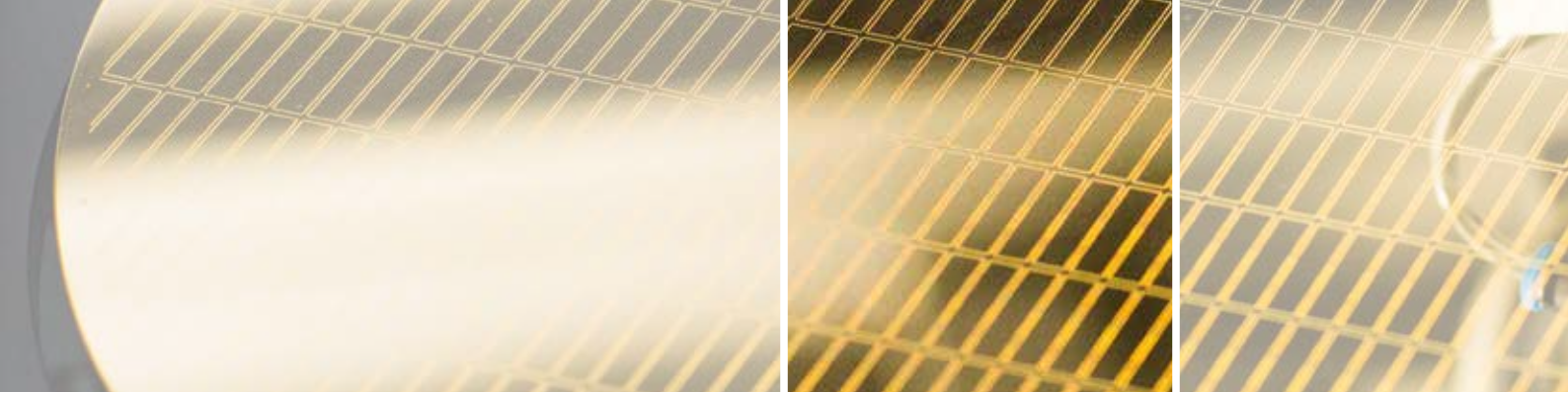
SD12

Manual system
up to 300 mm

Solvent Processes

- + Puddle / Spray Developing
- + Lift-off
- + Wafer Cleaning





MASK ALIGNER (PROXIMITY EXPOSURE)

MJB4

Manual system
up to 100 mm

- + Mask Alignment
- + Exposure
- + Nanoimprinting



MA/BA Gen4 Pro Series

Semi-automated system
up to 150 mm / 200 mm

- + Mask and Bond Alignment
- + Exposure
- + UV Bonding
- + Fusion Bonding
- + Micro- and Nanoimprinting
- + Selective Plasma Activation

Also available as BA8 Gen4 Pro configuration



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

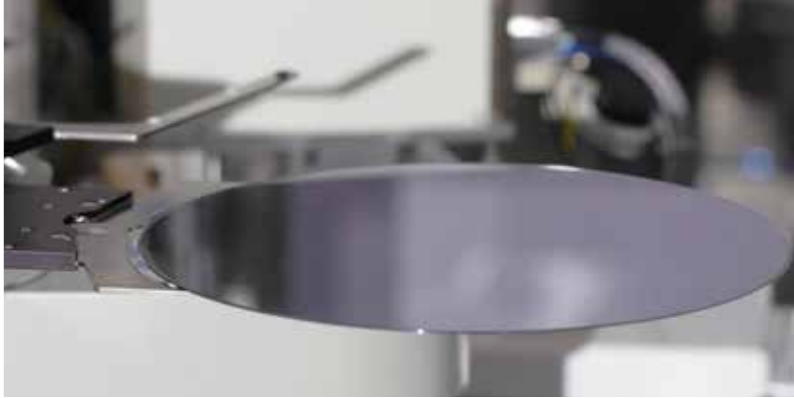
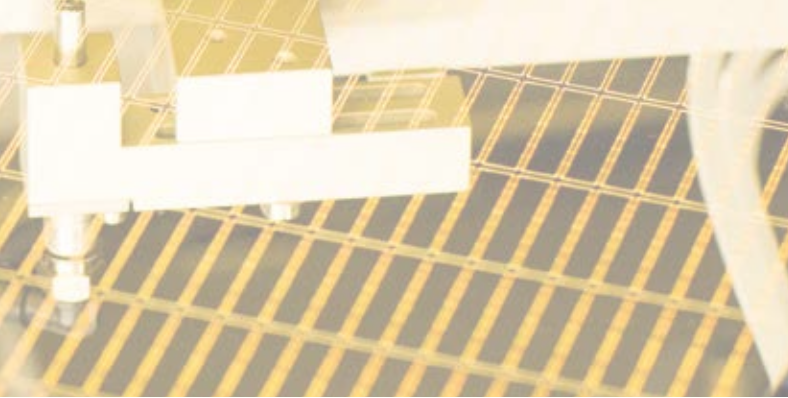


MA12

Semi-automated system
up to 300 mm

- + Mask Alignment
- + Exposure





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 Gen2

Automated system
up to 300 mm

- + Mask Alignment
- + Exposure



PROJECTION LITHOGRAPHY SYSTEMS

DSC300 Gen2

Automated system
up to 300 mm

- + Alignment
- + Full-Field Scanning
Projection

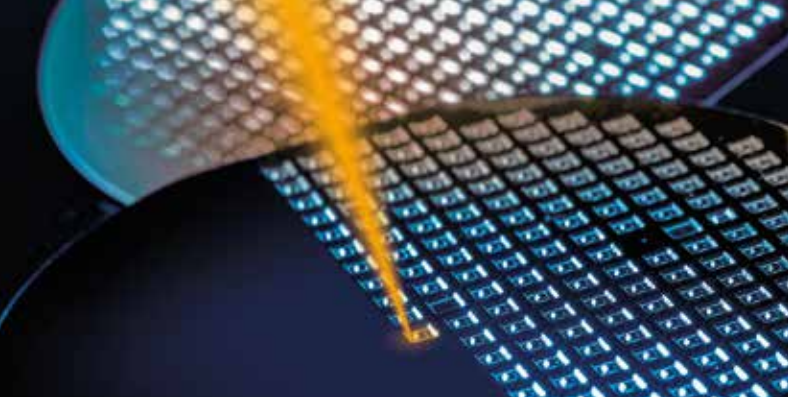


DSC500

Automated system
up to 450x500 mm

- + Alignment
- + Full-Field Scanning
Projection





LASER PROCESSING SYSTEMS

ELP300 Gen2
Automated system
up to 300 mm
(Excimer Laser)

- + Alignment
- + Ablation
- + Laser-Assisted
Debonding
- + Laser Seed Layer
Removal



WAFER BONDING SYSTEMS

XB8
Semi-automated system
up to 200 mm

- + High-Force Wafer Bonding



SB6/8 Gen2
Semi-automated system
up to 200 mm

- + Wafer Bonding





WAFER BONDING SYSTEMS

DB12T

Semi-automated system
up to 300 mm

- + Mechanical Debonding



XBS200

Automated system
up to 200 mm

- + High-Force Wafer Bonding
- + Bond Alignment



ELD300

Semi-automated system
up to 300 mm

- + Excimer Laser-Assisted Debonding



XBS300

Automated system
up to 300 mm

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



XBC300 Gen2

Automated system
up to 300 mm
(wafer or wafer on tape frame)

- + Excimer Laser-Assisted Debonding
- + Mechanical Debonding
- + Cleaning



NORTH AMERICA

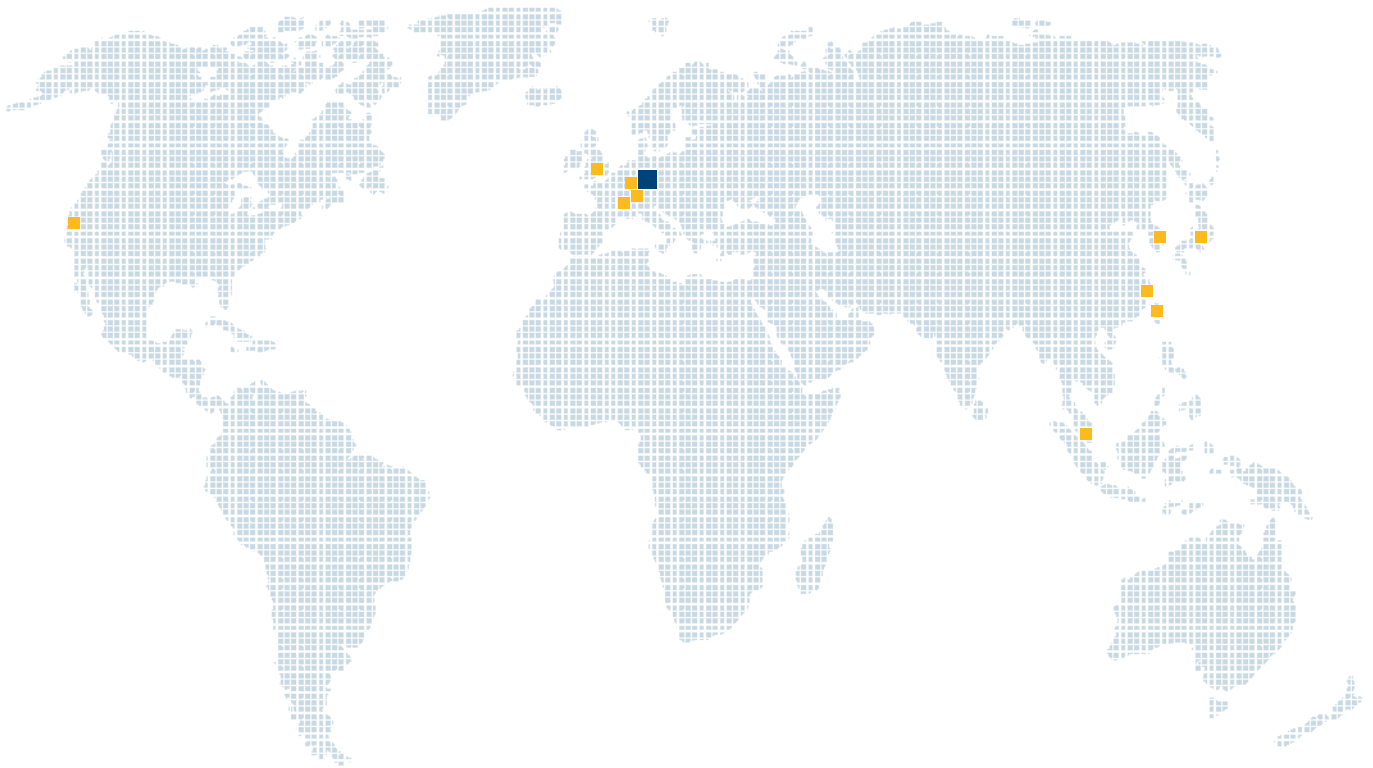
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