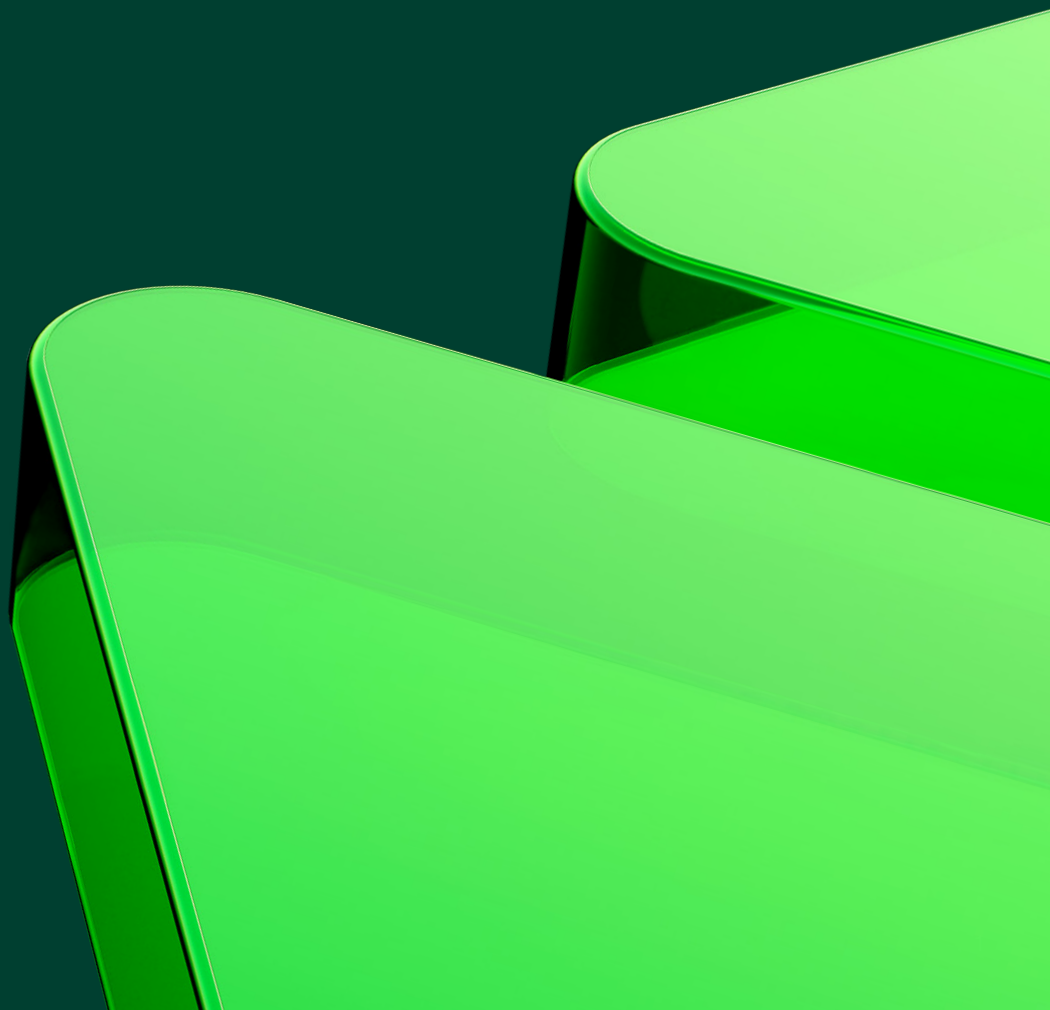
SUSS

Company profile & product portfolio



Product portfolio

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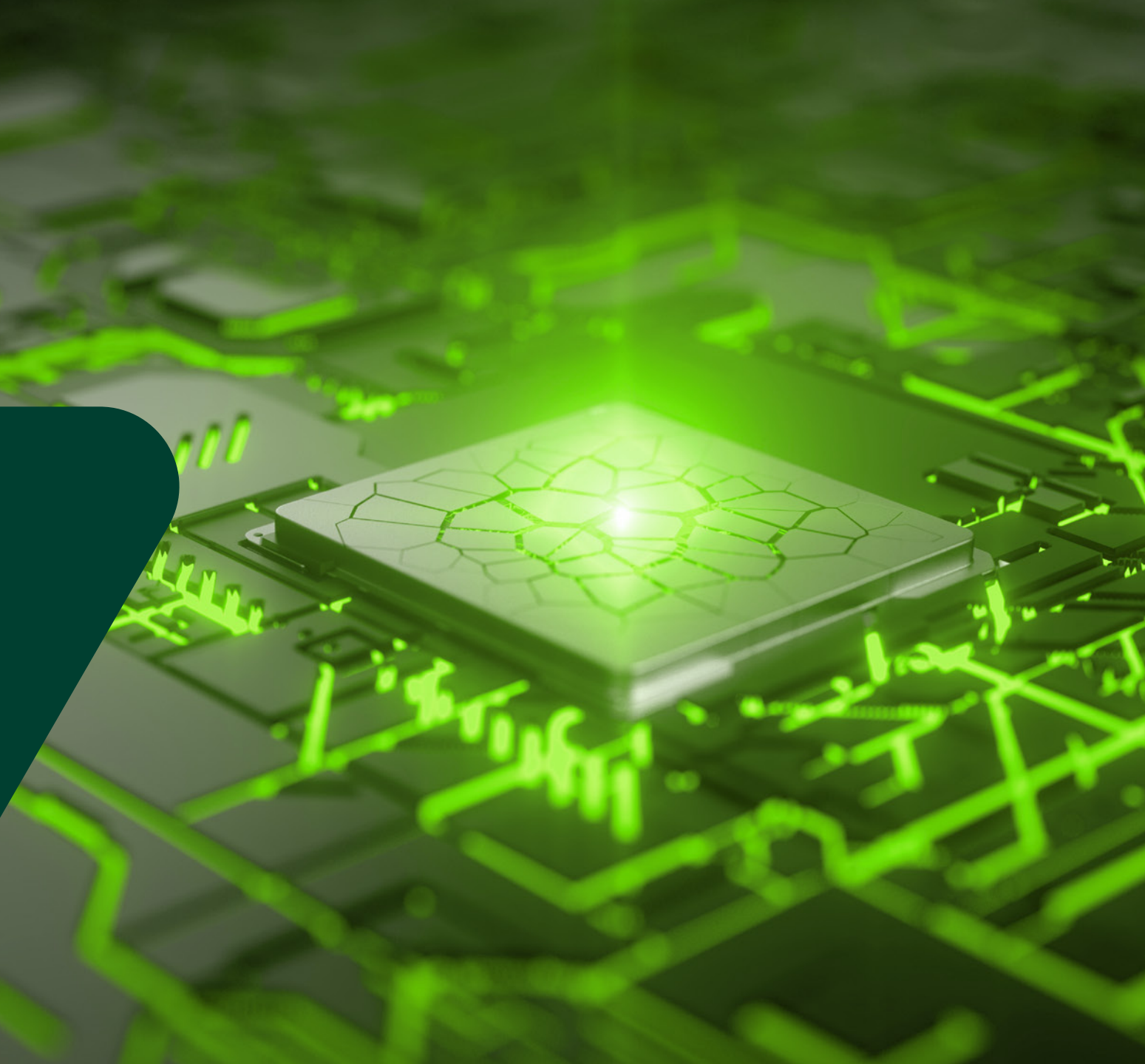
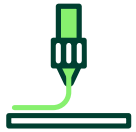


With more than 75 years of engineering experience SUSS is a leader in enabling advanced backend and photomask solutions in the semiconductor industry and related markets.

Our portfolio covers a comprehensive range of imaging, coating and bonding systems as well as photomask equipment. SUSS 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 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 supports more than 8,000 installed systems worldwide.

SEGMENTS

FRONT END	ADVANCED BACKEND
PHOTOMASK SOLUTIONS	ADVANCED BACKEND SOLUTIONS



PRODUCTS AND PROCESS STEPS

PHOTOMASK EQUIPMENT	IMAGING SYSTEMS	COATING SYSTEMS	BONDING SYSTEMS
• Photomask Cleaning • Bake / Develop • Metrology	• Proximity Exposure (Mask Aligner) • Imprinting • Metrology • UV Projection (Scanner)	• Coating / Developing • Inkjet Printing • Metrology	• Bond Alignment • Permanent Bonding • Temporary Bonding • Debonding • Metrology

SUSS is 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 semicon- ductor industry. The leading **advanced packages** include flipchip, WLCSP, FOWLP and 2.5 / 3D packaging. SUSS 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's temporary bonding and debonding equipment enables processing of ultra-thin device wafers for leading edge 2.5 / 3D applications.

MEMS, Power & RF

MEMS, Power, and High-Frequency (RF) devices are essential building blocks of an intelligent, electrified, and connected world. Whether in 5G/6G networks, autonomous mobility, industrial automation or advanced healthcare diagnostics, these components drive innovation across a nearly infinite field of applications.
The manufacturing of such components requires highly specialized equipment to create mechanical or electrical 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 their production. From the start of volume manufacturing, SUSS has been a leading equipment supplier to this global industry.

Memory & Logic

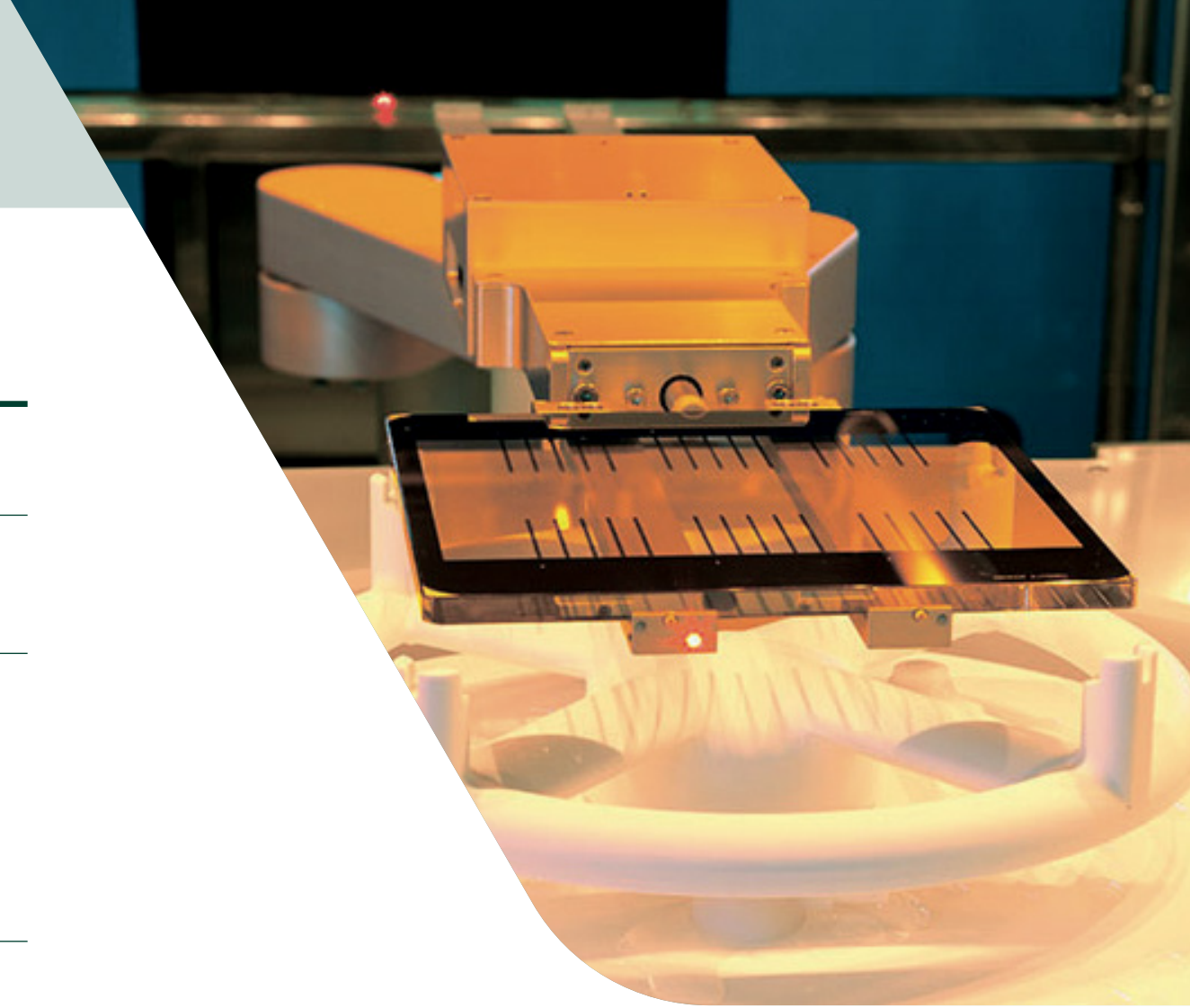
Memory and Logic devices are the "brains" of modern electronics, driving high-performance computing, artificial intelligence, and global data centers. As the industry pushes for ever-smaller structures and higher transistor densities, the photolithographic masks required become increasingly delicate and complex. SUSS MicroTec provides state-of-the-art mask cleaning and processing solutions specifically designed to protect and maintain these fragile features. By ensuring defect-free masks, SUSS supports the industry in achieving the high precision and reliability required for the most advanced logic and memory chips.

LED

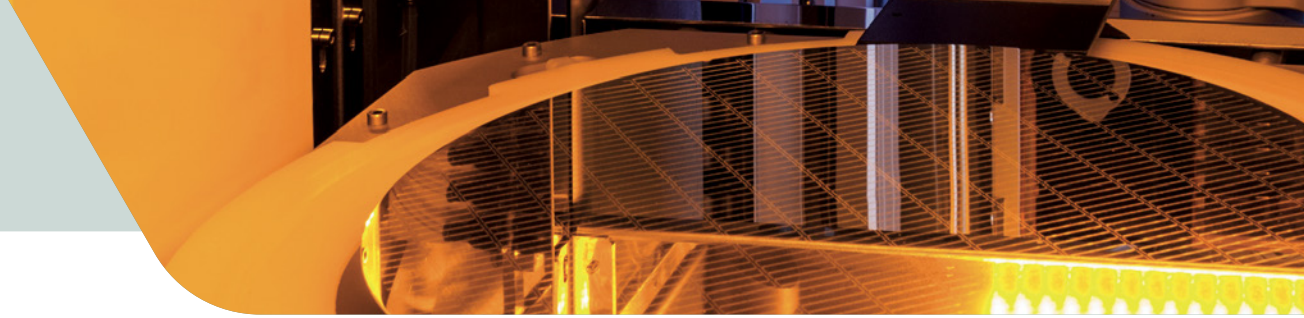
LEDs (Light Emitting Diodes) are based on compound semiconductors (III-V) and widely used in optoelectronic devices, consumer electronics such as tablets and mobile phones, automotive and general lighting applications. The manufacturing of LED devices requires dedicated equipment at lowest cost of ownership 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	• 25-Zone Controlled Post Exposure Bake • CD Profile Bake • Automated Optimization Routine to Define the Hotplate Program
Develop/Etch	• Low Impact ASONIC® Develop Process • Fan Spray Develop Process • Positive and Negative Tone Resists • Fan Spray Etch Process
Clean	• 172nm 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	• Pre Clean Defect Inspection • Post Clean Defect Inspection



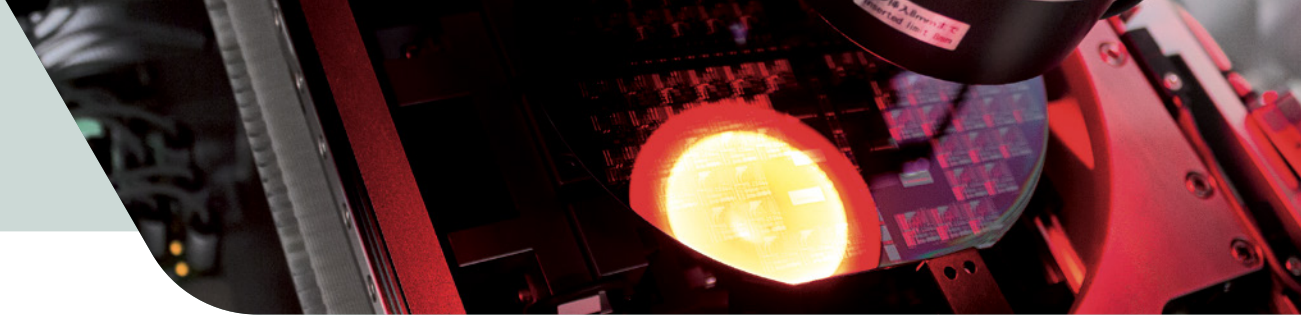
Wafer Coating



Process steps	Technologies
Wafer and Glass Substrate Handling	• Thin Wafer Handling • Warped Wafer Handling • Edge Handling • Taiko Wafer Handling
Spin Coating	• GYRSET® and/or Open Bowl • Thin and Thick Resists and Adhesive Systems • Planarization • EBR • BCB • Polyimide/PBO
Spray Coating	• High Topographies up to 600µm and more • Via Holes • KOH Etched Cavities • V-Grooves and Trenches • Lenses
Inkjet Printing	• Digital and Additive Patterning • Masking Resists • Solder Mask Coating • Conductive Interconnects • Isolation and Passivation Coatings • Stress Buffers • Adhesives • Trench Filling

Process steps	Technologies
Baking/Cooling	• Proximity
Developing	• Positive and Negative Tone Resists • Dry Film Resist • Front and Backside Rinse • Fan Spray • Binary Spray & Puddle • Puddle • Megasonic
Metrology	• Automated Tool Qualification • EBR/Edge Coat Measurement • Post Coat Film Thickness Measurement • Post Develop Defect Inspection

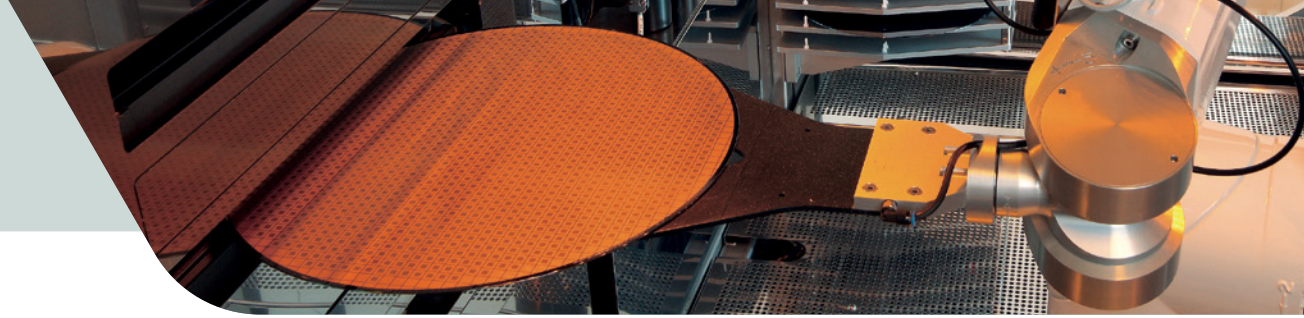
Lithography & Patterning



Process steps	Technologies
Wafer Handling	• Thin Wafer Handling • Warped Wafer Handling • Fragile Wafer Handling • Edge Handling
Alignment	• Top-side Alignment • Bottom-side Alignment • Infrared Alignment • Optical Pattern Recognition • Non-contact Pre-Alignment
Proximity Exposure	• UV LED Exposure • Diffraction Reducing Optics • Large Gap Exposure • High Resolution Exposure • UV250–UV400 Exposure Systems • High Uniformity Exposure • Customized Illumination

Process steps	Technologies
Projection Exposure	• Full-field Continuous Scanning • Stitching-free Exposure • Magnification Correction • Beam Steering • Recipe Selectable NA • Recipe Selectable Wavelength
Imprint Lithography	• SUSS MicroTec Imprint Lithography Equipment (SMILE)
Metrology	• Front-to-backside Target Alignment • Overlay Measurement • Surface-to-subsurface Target Alignment (IR)

Wafer Bonder



Process steps	Technologies
Wafer Handling	• Thin Wafer Handling • Warped Wafer Handling • Fragile Wafer Handling • Edge Handling • Aligned Wafer Handling
Bond Alignment	• Top-side Alignment • Bottom-side Alignment • Inter-substrate Alignment • Infrared Alignment
Permanent Bonding	• Hybrid Bonding + Sequential D2W + Collective D2W + W2W • Fusion Bonding • Metal Diffusion Bonding • Eutectic and SLID Bonding • Glass Frit Bonding • Anodic Bonding • Adhesive Bonding

Process steps	Technologies
Plasma Activation	• Plasma Activation for Fusion Bonding • Full Surface Activation
Cleaning	• Aqueous Cleaning • Solvent Cleaning • Megasonic Cleaning
Temporary Bonding/ Debonding	• Supporting Various Temporary Bond Materials and Processes • Mechanical and Laser Release
Metrology	• 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 µm – 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 200 mm

- Spray Coating

MCS8

Manual system

up to 200 mm

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

ECD8

Manual system

up to 200 mm

- Spin Coating
- Puddle Developing

Coating / Developing Systems

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

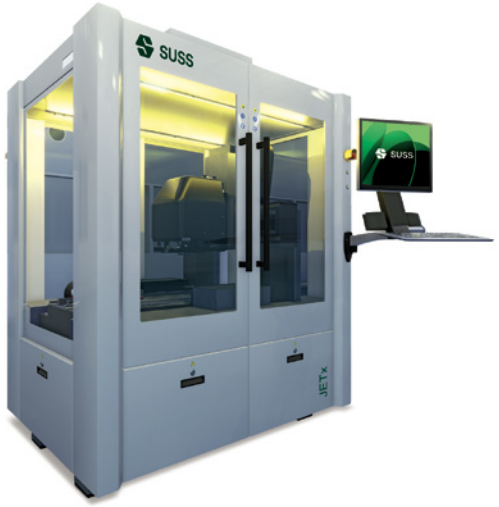
Inkjet Printer

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

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

Metrology Systems

DSM8 Gen2

Semi-automated system

up to 200 mm

- Front-to-back Alignment Metrology
- Top Side Alignment Metrology
- Surface to Bond Interface Metrology (with IR)
- Bond Interface Alignment Metrology (with IR)

DSM200 Gen2

Automated system

up to 200 mm

- Front-to-back Alignment Metrology
- Top Side Alignment Metrology
- Surface to Bond Interface Metrology (with IR)
- Bond Interface Alignment Metrology (with IR)

Proximity Exposure

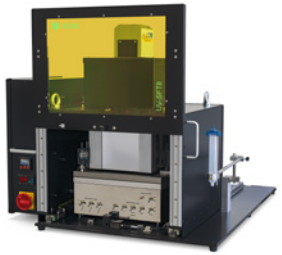
Mask Aligner

MJB4

Manual system

up to 100 mm

- Mask Alignment
- Exposure



NIL-SFT8 Series

Manual system

Master sizes up to 200 mm

- Stamps for micro- and nanoimprint process
- Compatibility with a large variety of UV curable stamps material
- SMILE Micro- and Nanoimprinting

NIL-SFT12 Series

Semi-automated system

Master sizes up to 300 mm

- Stamps for micro- and nanoimprint process
- Compatibility with a large variety of UV curable stamps material
- SMILE Micro- and Nanoimprinting

MABA 6/8 Gen4

Semi-automated system

up to 150 mm / 200 mm

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

Also in BA8 Gen4

MA12 Gen3

Semi-automated system

up to 300 mm

- Mask Alignment
- Exposure
- SMILE Micro- and Nanoimprinting

Proximity Exposure

Mask Aligner

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

Projection Exposure

UV Scanner

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

SB8 Gen2

Semi-automated system

up to 200 mm

- Wafer Bonding

DB12T

Semi-automated system

up to 300 mm

- Mechanical 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 (Temporary Bonding Platform)

up to 300 mm

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

Wafer Bonding Systems

XBS300 W2W

Automated system (Hybrid Bonding Platform)

up to 300 mm

- W2W Bond Alignment
- Collective D2W Bonding
- Surface Activation
- Wafer Clean
- Metrology Module

XBC300 Gen2

Automated system (Wafer or Wafer on Tape Frame)

up to 300 mm

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

XBC300 Gen2 D2W / W2W

Automated system (Hybrid Bonding Platform)

up to 300 mm

- W2W Bond Alignment
- Surface Activation
- Wafer Clean
- Metrology Module
- Integrated Die-Bonder for D2W

XBC300 Gen2 D2W

Automated system (Hybrid Bonding Platform)

up to 300 mm

- Sequential D2W Bonding
- Surface Activation
- Wafer Clean
- Metrology Module
- Integrated Die-Bonder for D2W

Our locations

North America

- USA

Europe

- Germany
- United Kingdom
- France
- Netherlands

Asia

- Japan
- Korea
- China
- Singapore
- Taiwan

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