

n.jet semicon

NOTION
SYSTEMS

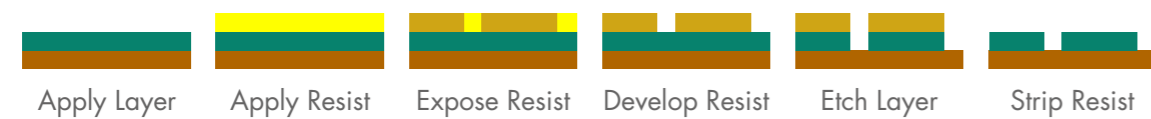


INKJET SOLUTIONS FOR THE SEMICONDUCTOR INDUSTRY

ADDITIVE PROCESSES IN SEMICONDUCTOR MANUFACTURING

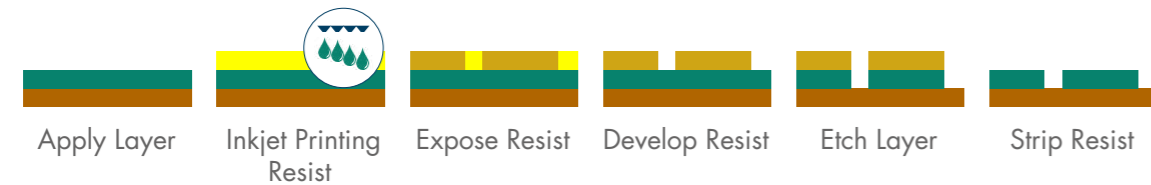
The n.jet semicon series offers a wide range of processes for frontend, as well as backend processes in the semiconductor industry. The platform is built for various substrate sizes and applications within the semiconductor and related industries.

CONVENTIONAL LITHOGRAPHIC PROCESS CHAIN



DIGITAL INKJET PROCESS

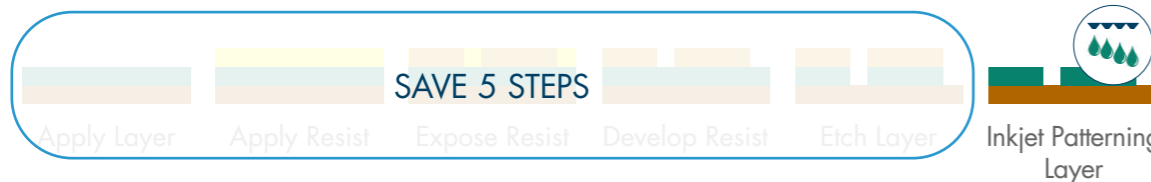
LEVEL 1 | MATERIAL EFFICIENT RESIST PRINTING



LEVEL 2 | DIRECT RESIST PATTERNING



LEVEL 3 | DIRECT PATTERNING OF FUNCTIONAL LAYER



KEY DRIVERS FOR OUR BUSINESS

Inkjet is a non-contact, digital printing technology which creates fine structures of down to 20 μm and processing without screens or mask. The fully digital non-contact printing enables wet-on-wet processing without the need for masks or screens.

Inkjet is used to replace established subtractive process sequences and reduces waste and energy consumption, which makes electronics production more economical and ecological.

ECONOMICAL DRIVERS

REDUCED PROCESS STEPS



HIGHER YIELD



REDUCED ENERGY CONSUMPTION



FASTER TURNAROUND



REDUCED MATERIAL WASTE



TECHNICAL DRIVERS

CONTACTLESS DIGITAL PRINT



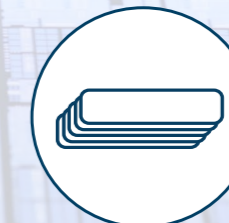
PRINT ONLY WHERE REQUIRED



PRINT MULTIPLE MATERIALS



PRINT MULTIPLE LAYERS



WET-ON-WET PROCESSING



INKJET APPLICATIONS



Etchresist applications

- Si Power Electronics
- Inkjet hotmelt etch resist for deep silicon etching
- Substrate size up to 300 mm



Photoresist applications

- Full area coating and masking with conventional photoresists
- Printing on glass
- Substrate size up to 600 mm x 600 mm



NIL applications

- Inkjet printing of nano imprint resists
- AR/VR structures
- Optical I/O interfaces
- Variable thickness (80 - 400 nm)

INKJET MATERIALS

The semiconductor industry is entering a new era of innovation, where precision, flexibility, and efficiency are more important than ever. Inkjet printing technologies are redefining how functional materials can be deposited, patterned, and integrated into advanced devices. By enabling additive, maskless, and digitally controlled processes, inkjet materials open the door to faster prototyping, cost-effective manufacturing, and entirely new design possibilities.

MATERIALS

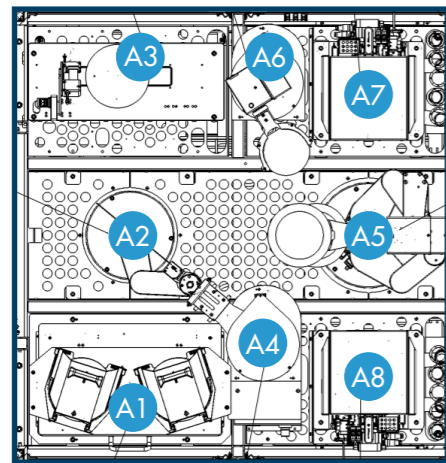
CATEGORY	EXAMPLES	APPLICATIONS
Photoresist	Positive resists Negative resists Nano-imprint resist (NIL)	Masking for etching Lift-off processes NIL
Etch resists	UV-curable resists Hotmelt	Power electronics Deep silicon etching
Conductive inks	Silver-nanoparticle inks, MOD inks	Printed interconnects Antennas EMI shielding
Semiconducting inks	Perovskite inks	Solar cells
Dielectric inks	Polyimide (PI) Solder mask	Gate dielectrics Printed capacitors
Functional Polymers	3D inks UV-curable polymers	Wafer thinning Encapsulation MEMS packaging SiC power electronics



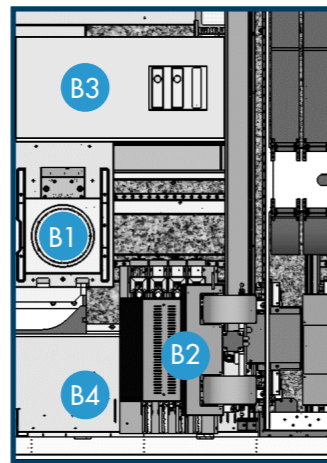
n.jet semicon PLATFORM

The platform comes with integrated edge handling for any substrate type or wafer size, integration with the MES system (e.g., SECS-GEM), and state-of-the-art pre- and post-processing modules. Our nozzle replacement strategies and our full process control improve yield and process stability. The system can be combined with high-precision dispensing units that further enlarge the window of processable materials within the same platform.

CLUSTER SYSTEM



A: Loading & post-processing



B: Inkjet

- A1 - Wafer cassettes I/O
- A2 - I/O robot (A1, A3, A4)
- A3 - Pre-alignment & OCR
- A4 - Wafer transfer buffer
- A5 - Process robot (A4, A6, A7, A8, B1)
- A6 - Flipping unit
- A7 - Post process tower I (HP & UV stack)
- A8 - Post process tower II (HP & cool plates stack)
- B1 - Inkjet print stage
- B2 - Inkjet process unit
- B3 - Maintenance area I
- B4 - Maintenance area II

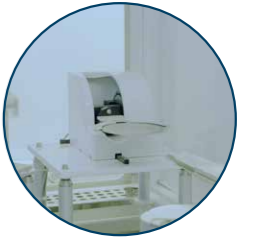
LOADING & POST-PROCESSING



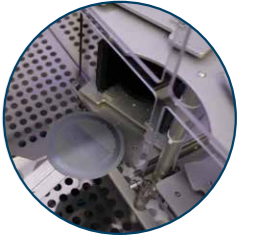
WAFER HANDLING



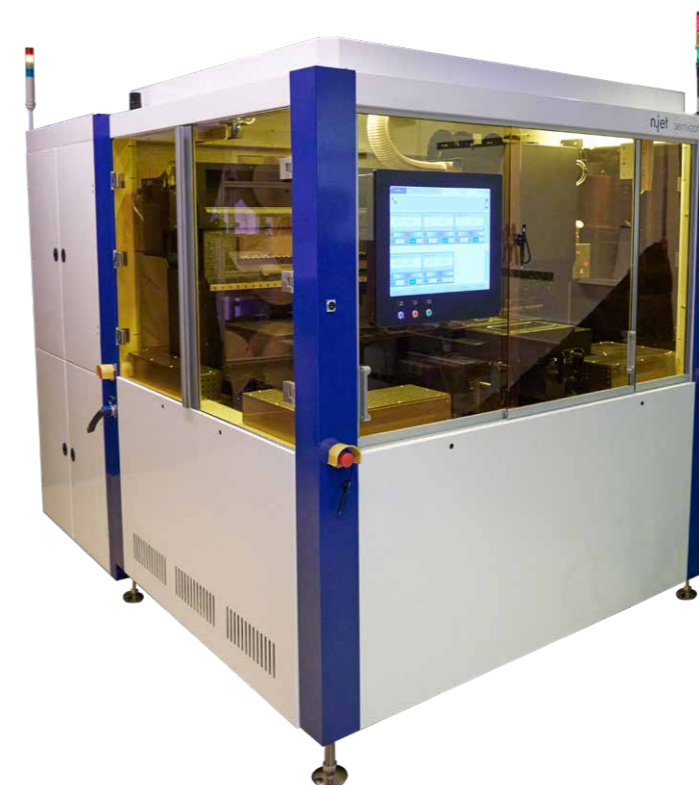
FLIPPING UNIT



I/O STATION OPEN CASSETTES



INKJET



CLEANING STATION



INKJET PRINT STAGE



WAFER LIFTING PINS



NOTION

S Y S T E M S



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