



CeraPrinter

X-Serie

TurnKey Materials Deposition Inkjet Printer

CeraPrinter X-Series is a TurnKey Materials Deposition Inkjet tool for process development in Printed Electronics and Smart 3D Printing.

Thanks to its patented rotative head-holder “plug and play”, full curing area, in-situ characterization devices and exclusive software suite, CeraPrinter X-Series is a perfect “all inclusive” tool to enable advanced inkjet process development.

Advantages

- > Designed for Inkjet Process Development in various applications
- > Quick Start-up & User-friendly tool
- > Available dedicated configurations for specific fields and markets
- > Easy Lab-to-Fab transfer

OUR OFFER

The whole CeraPrinter equipment range is high accuracy multi-material deposition systems with in-line multi-curing technologies, in-situ characterization facilities embedded simultaneously enabling high precision deposition of functional materials and full area curing in each pass.

Evolutionary at lowest cost and delivered with exclusive software suite developed by CERADROP (CeraSlice, DropAnalyser and FabAnalyser) allowing its quick start-up, easy to use and bottom-up approach for functional components design.

To go forward with our customers, we provide strong partnership, highly qualified, responsive worldwide maintenance and support team to provide assistance through each stage of project development.

EXAMPLES OF PRINTED ELECTRONICS APPLICATIONS

- | | |
|-----------------------|--------------------------------|
| • HF Antenna | • LTCC |
| • RFID | • Multilayer Ceramic Capacitor |
| • OPV | • Magnetic components |
| • OLED | • Temperature sensors |
| • Interconnection | • Piezoelectric actuators |
| • Printed memories | • Sol gel selective deposition |
| • Photodetectors | • Photocatalytic elements |
| • Lens | • Fuel cells |
| • Semiconductor | • Solar cells front contacts |
| • Biology | |
| • Ceramic thick films | |

X-Serie | Product Specifications

- Substrate up to 305 mm x 305 mm with thickness up to 10mm
- High accuracy five axis with motorized adjustable printing resolution, substrate alignment ($\pm 2 \mu\text{m}$) and nozzles self calibration ($< \pm 3 \mu\text{m}$)
- Up to three different printheads (more on request) to deposit aqueous, biologic, solvent and UV based inks
- Able to print in Raster-Scan Mode (X or Y), Vector Mode (XY) and Single Pass (X or Y)

HARDWARE

MOTION SYSTEM: HIGH ACCURACY CALIBRATED FIVE AXIS DEVICE

Three translation axis and two motorized rotations (printheads resolution calibration + substrate alignment)

X and Y stage accuracy	< $\pm 1.5 \mu\text{m}$
Z accuracy	< $\pm 2 \mu\text{m}$
X and Y stage repeatability	< $\pm 0.5 \mu\text{m}$
Z repeatability	< $\pm 1 \mu\text{m}$
Print velocity	up to 500 mm/s

PRINTHEADS HOLDER: MOTORIZED AND PLUG & PLAY

Embeds easily a wide range of printheads with motorized resolution fine tuning and nozzles position self calibration

Print resolution	< $5 \mu\text{m} \times 5 \mu\text{m}$
Printheads number	Up to 3 (mixed types)
Printhead types	Single nozzle Low cost Dimatix Cartridges Drive per nozzle printheads Dimatix, Konica-Minolta and other on request (Xaar, Kyocera, Ricoh, Toshiba, Seiko...etc.)
Mounting	"Smart door" technology Accurate fast mount for printheads and its electronics
Ink tank	Cartridge 2 mL to 50 mL Aggressive solvents compatible
Printhead heating	Up to 60°C
Printhead Maintenance	Automated cleaning station

SUBSTRATE HOLDER: MOTORIZED VACUUM HEATED CHUCK

Designed to manage a wide range of substrates for many applications

Size	305 mm x 305 mm
Clamping	Vacuum with different areas
Heating	Up to 60°C

MECHANICAL

Machine footprint	1520 mm x 1290 mm x 1800 mm
Machine mean weight	1500 kg
Power	400 V/32A, 3 phases
Certification / Safety	CE (UL & CSA on request)

CAMERA: TWO DEVICES WITH DIFFERENT LIGHT SOURCES

Two cameras with different light sources to check jetting, to align substrate and to analyze all parts of printed components

Droplet analysis	
CCD	1392 x 1040 pixels
Visualization area	1.31 x 1.64 mm
Image analysis	Fully automated (DropAnalyser)
Alignment and printed components analysis	
CCD	1624 x 1228 pixels
Visualization area	1.79 x 1.35 mm
Alignment types	Marks, edge or specific if required
Image analysis	Fully automated (FabAnalyser)

POST-TREATMENT AREA: TO DRY AND TO CURE PRINTED LAYERS

Fully integrated and synchronized with the printing for all kind of drying/curing devices

Post-process compatibility	IR, UV, AdphosNIR®, Novacentrix PulseForge®, Xenon Sinteron, Vacuum Drying
Substrate management	Directly by the manufacturing linear axis to avoid substrate manipulation
Solvent extraction	Exhaust connection

OPTIONS

IR Drying	Printhead slot
UV	Laser reflectometer
AdphosNIR®, Novacentrix PulseForge®, Xenon Sinteron, Vacuum Drying	HEPA filter
Other post-treatment	Dedicated software add-on
Specific hardware modification	Automated Handling (on request)
Automated sheet resistance measurement probe	

SOFTWARE

CERASLICE: EXCLUSIVE CAD/CAM SOFTWARE

Bottom-up approach to import, to edit, to simulate and to sequence the printing of a wide range of printed electronics and smart 3D printing designs

File formats	DXF, STEP, Gerber, GDSII, BMP (as an option via conversion tool)
Job editing	Directly from standard CAD file via CAD/CAM tool
Printing job parameters	Fully tunable for each part or under part of the components
Manufacturing sequence definition	Easy and fast, for each step of the printing process (printing vector, nozzle clogging control, alignment, printhead cleaning etc.)
Advanced simulator stage	Step by step, materials by materials
Experiment plans	Automated experiment plans generation to optimize inkjet process (fully customizable)
Customizable pre-loaded patterns	Square transistors, circular transistors, multilayer capacitors, induction, coil, etc.

DROPANALYSER: AUTOMATED DROP JETTING ANALYSIS SOFTWARE

Waveform tuning	Real time, fully open, drive per nozzle
Automation	Automatic printheads mapping
Analysis	Volume, velocity, jet straightness error Clogged nozzles detection Self nozzles positions calibration Drop to drop variation
Reporting	Detailed statistics report on whole nozzle plate

FABANALYSER: POST-PRINTING CHARACTERIZATION SOFTWARE

Layers analysis	Automated measurements (distance, area) Automated full printing area acquisition 3D reconstruction via laser reflectometer option
Substrate alignment	Manual or automatic Can be fully adapted to customer application