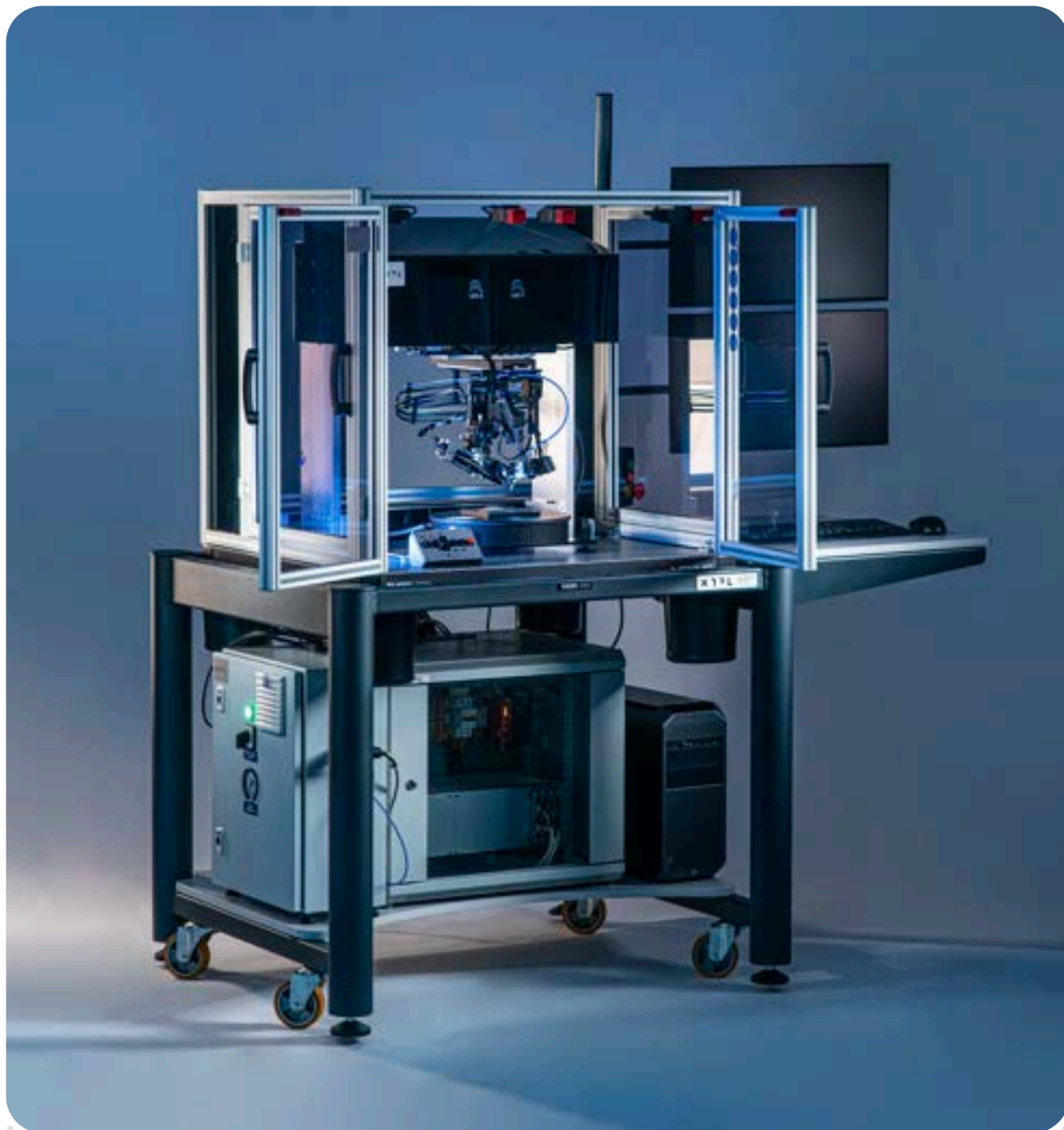


PRODUCT

# Delta Printing System



First truly additive method for printing  
single micron functional structures

[xtpl.com](https://xtpl.com)

## Benefits and advantages

- Feature sizes down to submicron scale
- Wide range of material support
- Printing on heterogeneous materials and 3D topographies
- Uniform & clean feature geometries: no overspray, high linewidth homogeneity
- Fast & easy exchange of cartridges & nozzles
- Only 0.1 ml of ink required to start printing
- Up to 100% ink utilization

## Ultra-Precise Dispensing\* (UPD) technology

- Ultra-high-resolution printing on various substrates
- High-viscosity materials along with small feature sizes
- High aspect ratios just after a single pass
- Wide range of printable materials: metallic nanoparticle inks and pastes, quantum dot inks, dielectrics, polymers, photoresists, organic, liquid metal alloys and more
- Uninterrupted interconnections on highly complex topographies

## Revolutionize your industry with the power of UPD



### Semiconductors

- High precision with submicron feature size
- A wide range of materials supported for varied semiconductor fabrication needs
- High aspect ratios, ideal for conductive power interconnections
- Quick process enhances efficiency and ensures uniform, reliable end products
- Printing on complex 3D surfaces More-than-Moore devices



### Flexible Hybrid Electronics

- Superior precision for Flexible Hybrid Electronics manufacturing
- Reliable 3D chip interconnections directly on vertical slopes
- Conductive and non-conductive materials for complex circuit patterns and reliable interconnections
- High aspect ratios in a single pass
- Uniform, clean geometries promote FHE device performance and Radio Frequency (RF) capabilities



### Biosensors

- Biosensing pattern fabrication on flexible substrates, vital for wearable sensors
- Functionalized materials to prototype biosensors targeted at specific markers
- Unparalleled precision for swift biosensor prototyping
- Ability to print structures through different types of microchannels



### Displays

- Ultra-high resolution printing for OLED and microLED displays
- Precision ideal for interconnections, microcavity filling, and defect repair
- Dispensing of various display architecture elements, such as color conversion layers and interconnectors
- Single-step, high-precision additive process increases yield and reduces production time and costs

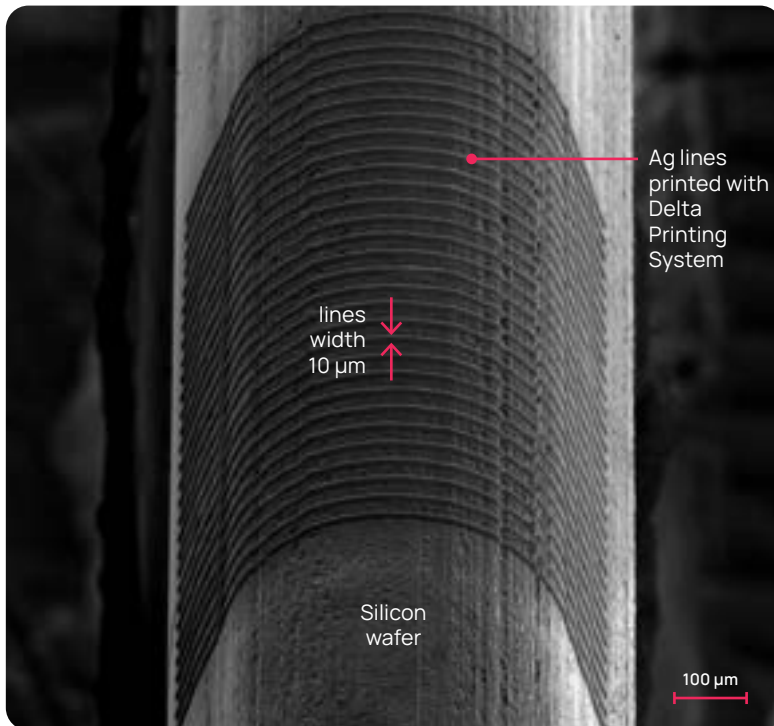


### Printed Circuit Boards

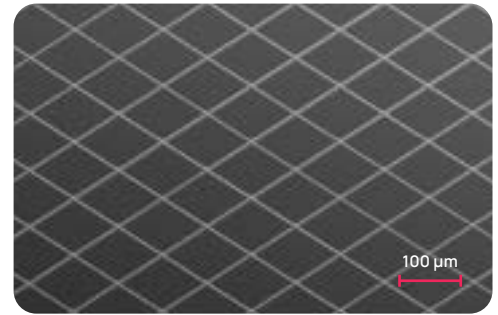
- A wide variety of materials facilitating specific PCB structure creation and integration
- High aspect ratio structures in a single pass
- Printing on complex 3D

## Case study

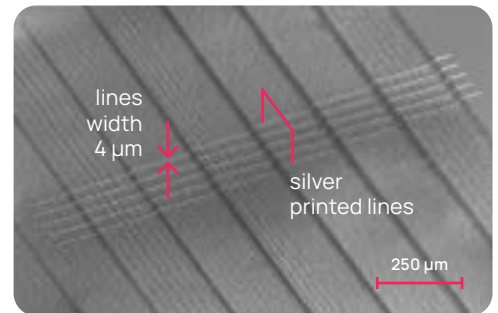
Silicon wafer printed on the edge with silver nanopaste CL85



The topology of Ag after thermal sintering on the glass substrate



Silver lines printed with silver nanopaste CL85



## DPS device details

Item	Value
Feature size range	ultra-high resolution from 0.5 µm to 1 µm
	high resolution from 1 µm to 10 µm
	medium resolution from 10 µm to 50 µm
Viscosity	from 10 to over 1 000 000 cP
Substrate alignment	3-point levelling table with rotation error correction
Printing area	200 mm x 200 mm
Maximum printing speed	10 mm/s
Process preview	Video feedback from 2 high-resolution and 1 top view cameras
XY motor movement accuracy / repeatability	2 µm / 0.5 µm
Z motor movement accuracy / repeatability (vertical adjustment)	0.5 µm / 0.5 µm
Printer cabinet dimensions (excluding peripherals and Printing Workstation)	1100 mm x 950 mm x 1925 mm

# What sets technology apart and makes it the ideal choice for you?

## Open platform for prototyping

- Versatile technology for a range of R&D applications
- Diverse resolutions
- Expanding library of materials
- Adjustable parameters
- Continuous R&D innovations

## Reliable, repeatable, and durable results for specific materials

- Groundbreaking precision with high-resolution 3D printing - guaranteed 1  $\mu$ m line printed during setup
- Extensive compatibility with high-resolution third-party inks
- High precision and flawless uniformity in your printed traces
- Unmatched electrical conductivity in printed traces, validated by pre-delivery and field-based proof-of-concept

## Easy to operate and maintain

- Seamless printing with our intuitive and simple-to-set printing parameters
- Straightforward, rapid procedure for cartridge and nozzle installation
- No need for post-printing cleanup
- Delta design fits perfectly to any setting
- System updates and development of new features

## XTPL Software

- Intuitive navigation: icons, toolbars, and other visual elements provide clues and make it easier to understand app features
- Increased productivity & minimize errors: with visual cues and easier navigation, users are less likely to make mistakes
- Faster access to features: well-designed software allows to quickly find and use the features



## Hear more about UPD from academic experts

### Prof. Norbert Fruehauf

Director of IGM at University of Stuttgart

"The XTPL's ability to directly dispense (in a mask-less approach) electrically conductive structures in the minimum feature size range of 1.5 – 10 micrometers is unique. In my view the XTPL's ultra-precise dispensing technology offers truly unique properties, which are an excellent fit to the future needs in the field of printable high-resolution and foldable OLED displays."

## Contact our team

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