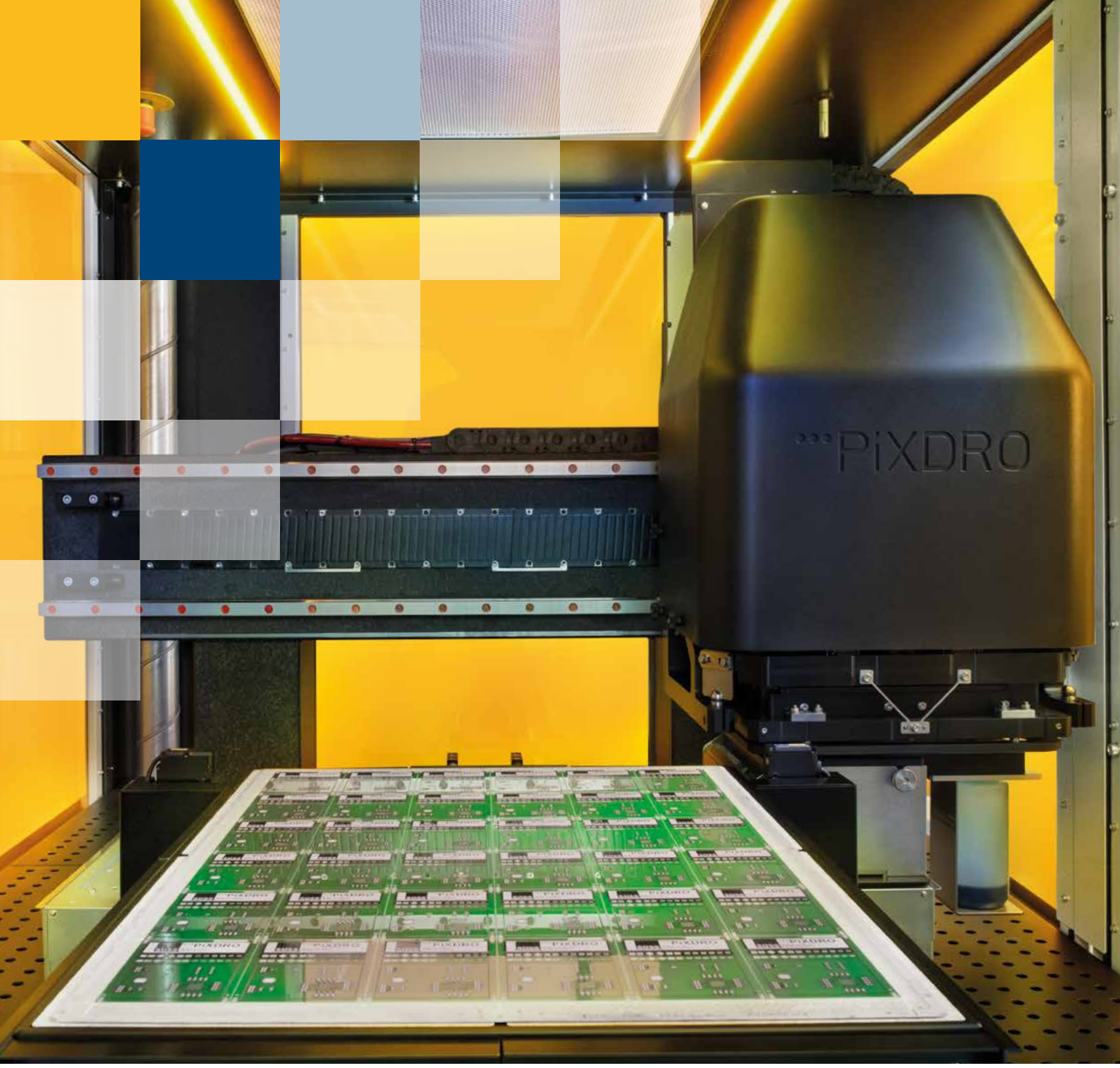
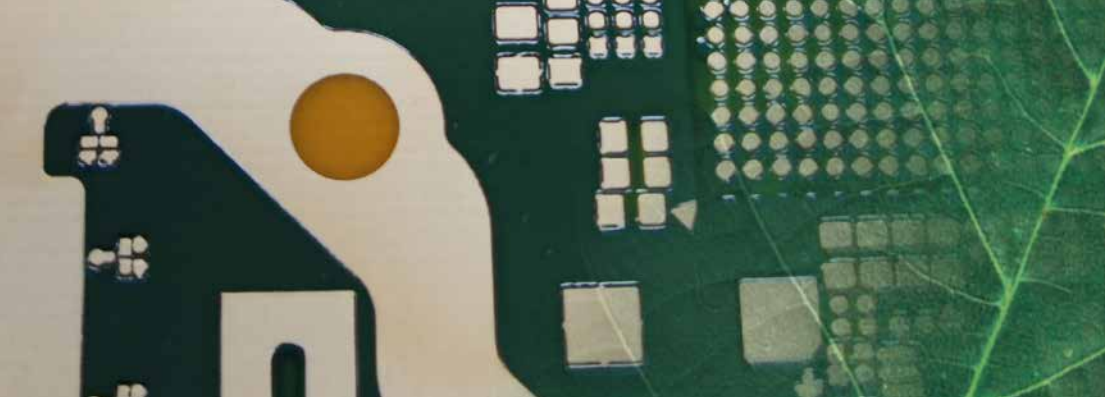


INKJET PRINTING

SUSS JETxSM

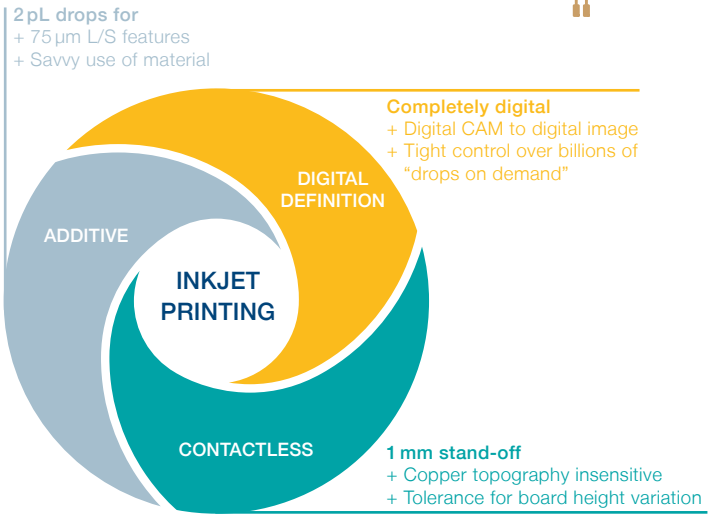
A FULLY DEVELOPED INKJET SOLUTION FOR SOLDER MASK: FUTURE PROOF FOR A GREENER WORLD

SÜSS MicroTec

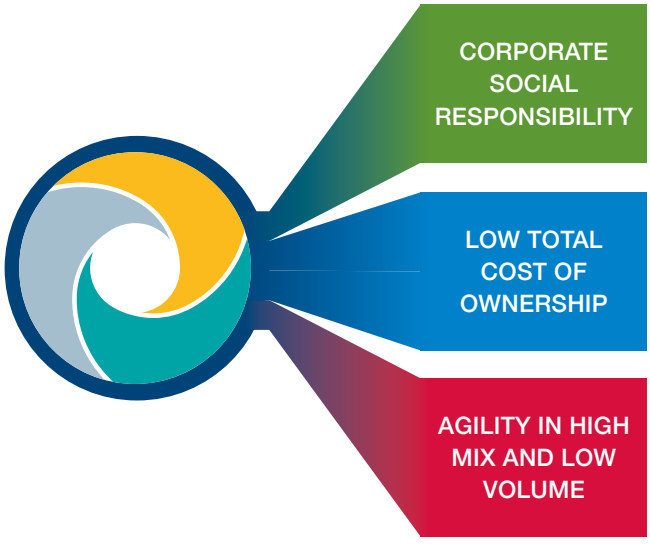


GREENER SOLDER MASK FOR PCB
DIGITAL - ADDITIVE - CONTACTLESS

Drop-on-demand inkjet printing is the next generation of solder mask patterning on PCB. Inkjet-based manufacturing offers significant advantages. First and foremost, it avoids costly photo processes (i.e. resist coating, exposure and development steps). Additionally, inkjet printing considerably reduces capital equipment investments, associated labor, floor space, chemical usage and related handling and disposal costs.
The high-level technologies enable higher yield for your soldermask.



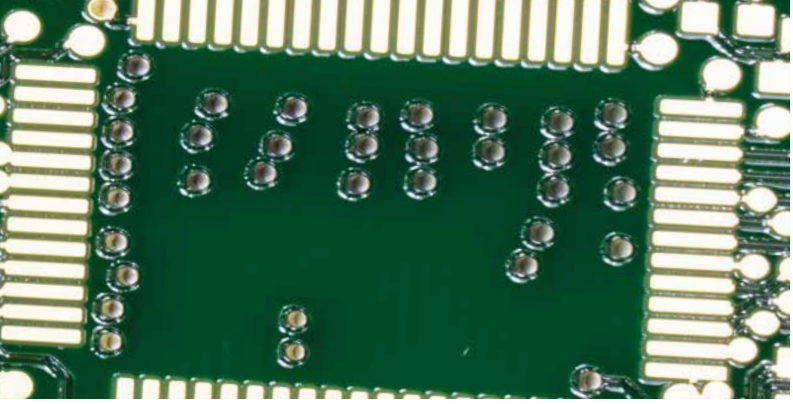
SOLDERMASK MANUFACTURING NEEDS
INKJET PRINTING FITS PERFECTLY



ENVIRONMENTALLY CONSCIOUS
+ Virtually zero handling of waste
+ Low energy consumption, smaller footprint
+ No developer chemicals
+ Support prototyping and mass production in one tool

LOWEST COSTS
+ Avoid photo processes
+ Material savings of up to 80%
+ JETx inkjet printer proven in mass production
+ High productivity, up to 60 sides/hour

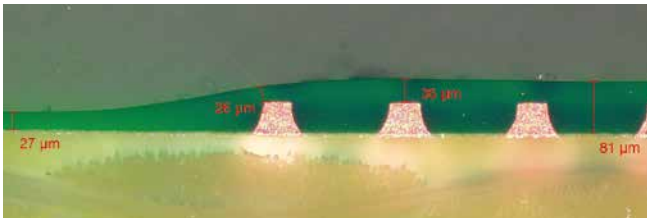
PERFECT LAYER COVERAGE, EVERY DESIGN
+ Controlled layer thickness at copper edges
+ Accurate registration with alignment of multiple fiducial marks
+ Inkjet solder mask materials comply with industrial standards
+ Direct CAM interfacing for a "what you see is what you get" experience



SUSS JETxSM

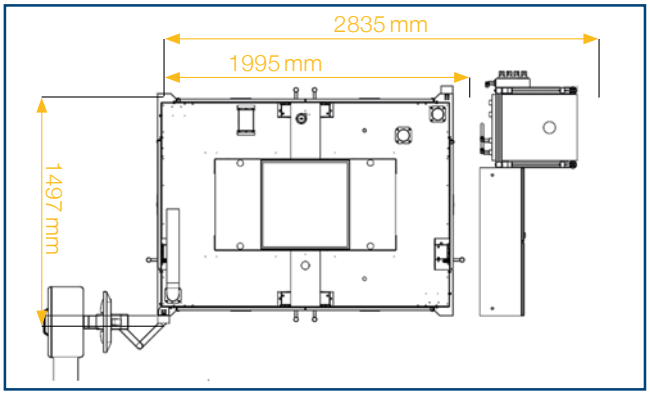
ADVANCED INKJET PRINTING SOLUTION FOR SOLDER MASK

The tight control over patterning enables the solder mask material to perform its function at its best, even on small copper features.



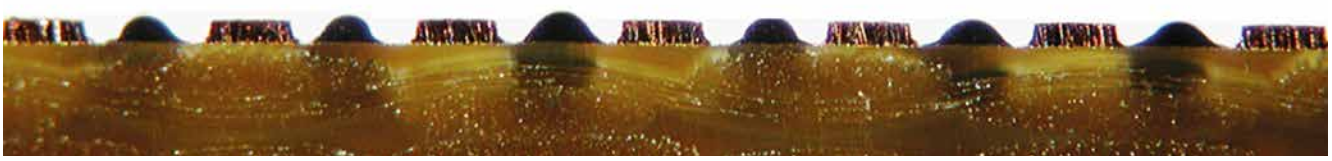
Great care is taken to ensure a conformal coating on copper edge (the "knee"). The breakdown voltage requirements defines a solder mask thickness design that is easily implemented via inkjet printing. Material savings and great electrical performances are no longer opposite targets.

The moderate footprint and an additional one meter of service area guarantees easy operations and maximum floor productivity. The tool height, with the 320 mm light tower, reaches 2510 mm. The precise granite frame brings the weight to 1800 kg.



PiXDRO JETxSM HIGHLIGHTS

+ High fidelity pattern
+ Throughput optimized to the thickness of a copper
+ Ink independence
+ Ink suppliers are available worldwide
+ Stage motion has high accuracy
+ Great Jetting quality and predictability thanks to latest generation MEMS printheads
+ Printhead technology is supported by recirculation for robustness against clogged nozzles



The cross sections in this page show a typical inkjet solder mask profile. Accurate thickness design at copper edge and well positioned dams between pads enable high functional reliability for PCB manufacturing.

SUSS JETxSM

ADVANCED INKJET PRINTING SOLUTION FOR SOLDER MASK

Leveraging on high tech partners for reliable production on JETx-M

Recirculation

The recirculation unit ensures a continuous flow of ink through each and every nozzle for a higher reliability of the jetting and a prompt start-up. Additionally it carefully controls the ink availability and temperature.

GIS GLOBAL INKJET SYSTEMS

Printheads

The small droplet size (2 pl) places accurately well-made features. High througput is guaranteed by the high jetting frequency and the large numbers of nozzles available (> 12 000 nozzles)

Dimatix

UV LED Arrays

The two UV LED arrays, positioned on both sides of the print bar, allow high-speed bi-directional printing.

Phoseon TECHNOLOGY

SUSS solder mask deposition knowledge is based on

Pre-Treatment

Pumice pre-treatment
Commercially available chemical pre-treatments

IMEC

Solder Mask Inks

SUSS solder mask deposition knowledge is based on commercial solder mask inks. The maturity of these material enables successful coating by complying with and exceeding IPC standards.

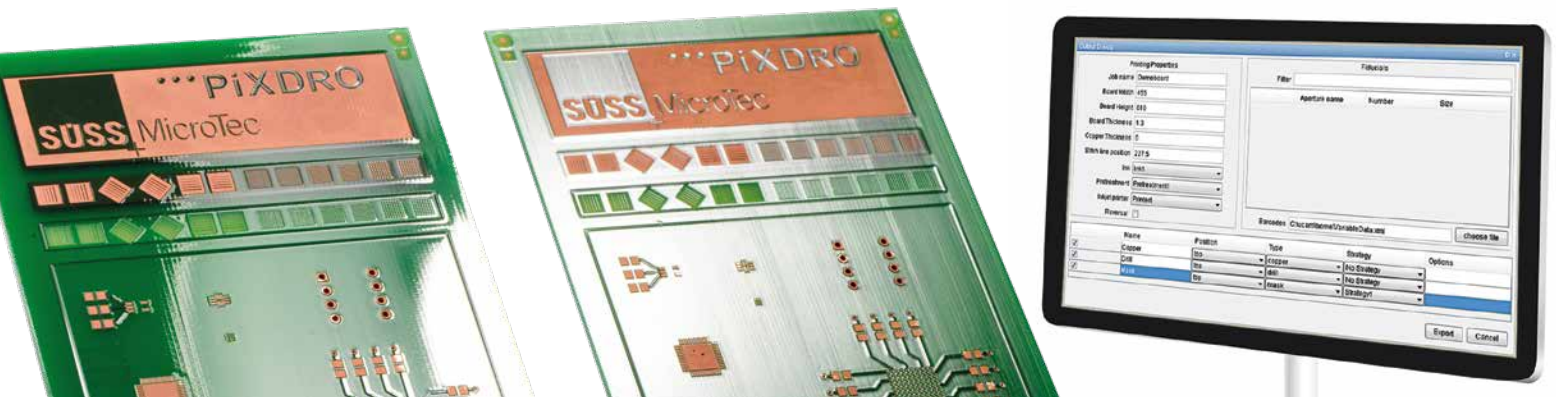
ELECTRA peters Coating Innovations for Electronics AGFA Agfa

Post-Treatment

OSP
HASL
ENIG

and other types of electroless metallization

Ask for the most updated information about commercial inks available and other types of electroless metallization.



ADVANCED CAM INTERFACING

MAIN FEATURES AND OPTIONS

The digital nature of the JETxSM is exploited fully when coupled to its CAM station front end: JETxSM*FE*.
This interface allows the CAM station engineer to define in detail how the tool will implement the solder mask. The user will declare the known aspects of the manufacturing, like the pre-treatment applied to the board incoming at the inkjet printing step, the ink material in the machine, the thickness of the copper and few other details that will ensure that nothing, during manufacturing, is left to chance or a fortuitous skill of an operator on the floor. The information travels from the CAM station to the tool.
Furthermore, the front-end will interpret, analyse and translate the incoming manufacturing design into a set of instruction for the tool to print a specific batch of samples. The information can be linked to a specific barcode which is assumed to be also on the designed board.

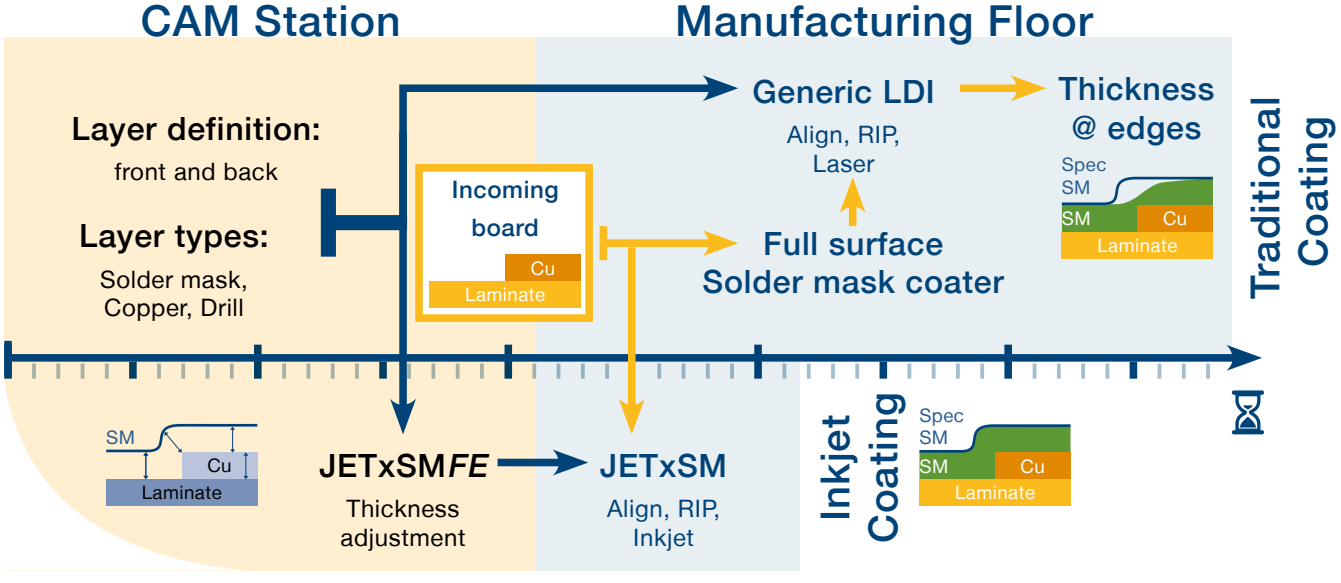
Input job details	Board geometry, copper thickness, ink details, pretreatment, fiducial list, batch barcode
Input CAM data	Copper, solder mask, drill holes format: Gerber, Gerber X2, ODB++*
Options	+ Support more design on a single board + Implement selective layer thickness + Create patterns of matte and glossy areas + Unique serialization (text, barcodes, dates, etc.) embedded in the solder mask layer
Output	Work package related to job details The package is related to a barcode identifier and is ready to be loaded by the JETxSM

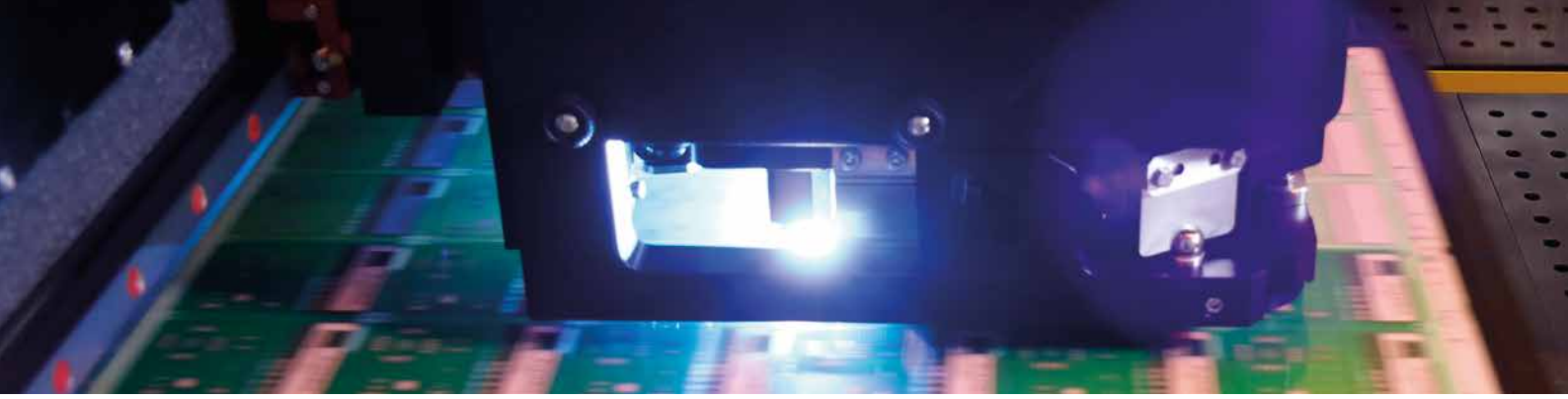
** other formats are optional*

Therefore, the right information is picked up and the print can be performed according to the specifications.

DIRECT COMMUNICATION FOR BEST RESULTS

BENEFIT FROM SHORT INFORMATION PATHS



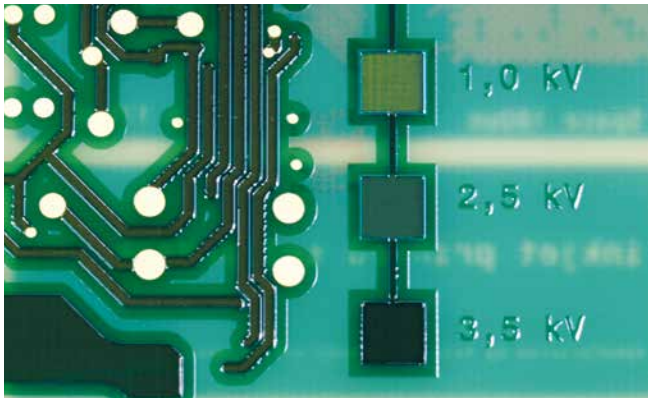


PiXDRO INKJET PRINTER AND SOLDER MASK PROCESS

TECHNICAL DATA

GENERAL INFORMATION	
Substrate size	460 x 610mm (18"x24") 610 x 765mm (24"x30")
Stage accuracy	+/- 5 µm (3 σ)
Stage repeatability	+/- 1 µm (3 σ)
Print speed	Up to 1000 mm/s
Power	400 V ± 10 %; 50/60 Hz; 3-phase+N+PE
Compressed air	6 – 10 bar; 200 liter / min
Ethernet	100BASE-T
Footprint and weight	Inkjet printer: 1500 x 2000 mm; approx. 1800 kg E-cabinet: 800 x 1100 mm; approx. 100 kg
Certification	CE
MAIN FEATURES	
Printhead type	FUJIFILM Dimatix Samba G3L
Printhead array	6 printheads
Total number of nozzles	12288 (2048 nozzles/head)
Pinning and Curing	2 UV bars, up to (20W/cm²)
Throughput	Up to 60 sides/hr*
Optional	automated PCB handling module

** depends on overall process conditions*



Draw your required breakdown voltages

Scan QR code for more aspects of inkjet solder mask coating!

Visit **www.suss.com/locations**
for your nearest SUSS representative or
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