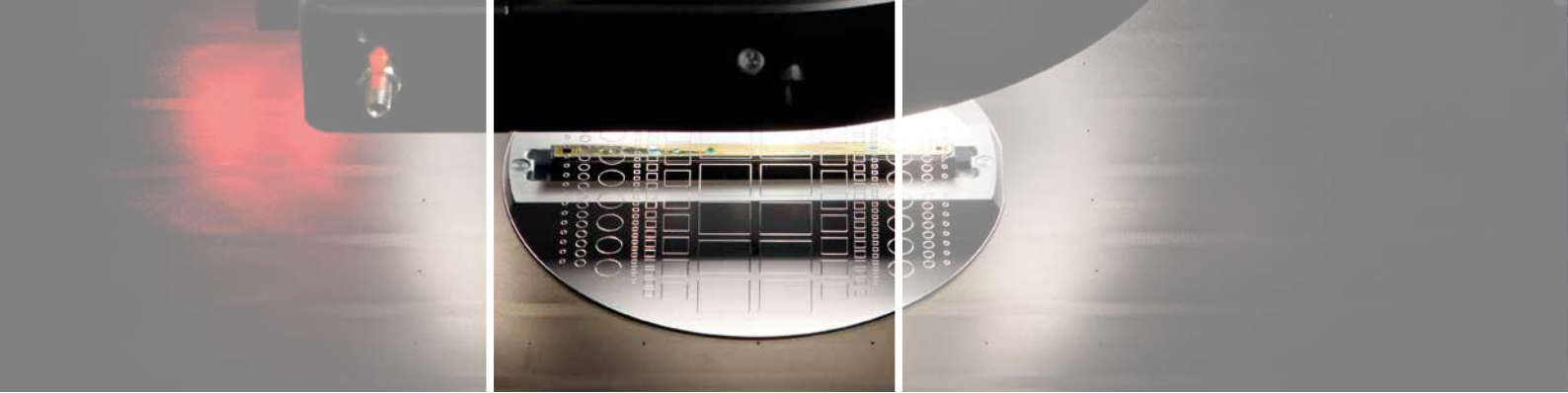


INKJET PRINTER

SUSS LP50

ADVANCED DESKTOP R&D INKJET PRINTER
USING **PIXDRO** TECHNOLOGY



INKJET PRINTER

SUSS LP50

VERSATILE PRINTER FOR A LARGE VARIETY OF PROCESSES

The SUSS LP50 is a desktop R&D inkjet printer for functional printing applications. It is designed for research and development of inkjet processes and applications, as well as evaluation and development of inkjet materials. The LP50 platform is an open, accurate, flexible, and easy to use system that will allow you to work at the frontiers of inkjet printing technology. The LP50 is designed for a wide range of applications such as semiconductor packaging, PCB, printed electronics, photovoltaic, display, and bio-medical.

With its PiXDRO technology, SUSS MicroTec is the world leader in inkjet printing for electronics applications. Many applications are under development at R&D centers using the SUSS LP50 R&D inkjet printer, and several have matured to a level where production sites adopt inkjet printing as a fully industrial production technology.

Inkjet printing is a very versatile technology. It can be used for direct material deposition for patterned or homogeneous coatings, from tens of nanometers up to tens of micrometers. By printing multiple layers of material on top of each other, it can also be used as a 3D printing method.

Inkjet is a non-contact deposition technology, so suitable for fragile and 3D substrates, and can fill trenches and cavities. Furthermore, it is excellent for direct printing of etching and plating masks.

SUSS MicroTec offers the industrial inkjet printing equipment to apply a wealth of functional materials. These functional materials can have dielectric, conductive, adhesive, mechanical, optical or chemical properties, and are printed with pico-liter sized droplets from a digital file.

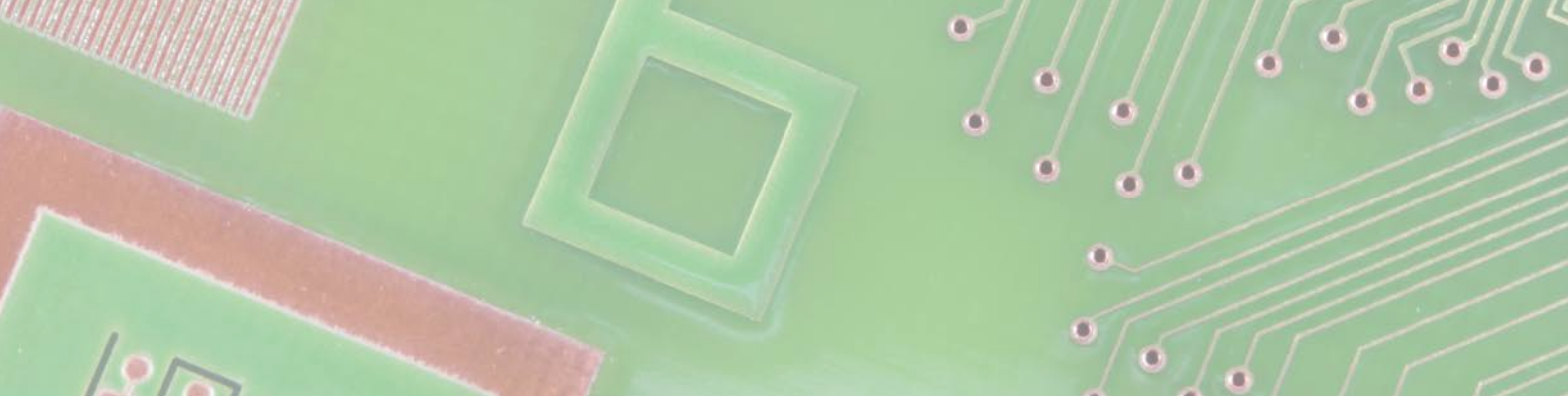
Inkjet printing is an additive manufacturing technology, hence has great advantages in relation to material usage, productivity, environmental impact and costs. It can create very fine features, down to 20 micron, and can replace conventional techniques such as lithography, screen printing, spray coating and dispensing. Because it is fully digital, there is no need for masks and screens, significantly saving material usage, and enabling fast product change-over times.



SUSS LP50 HIGHLIGHTS

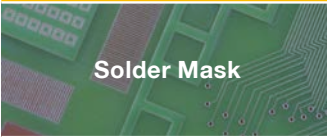
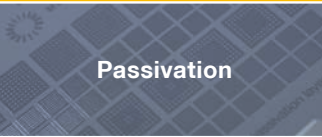
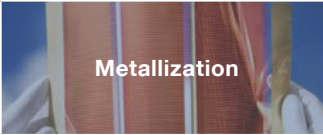

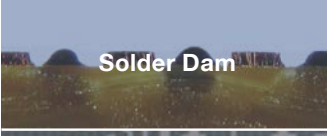


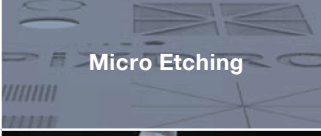

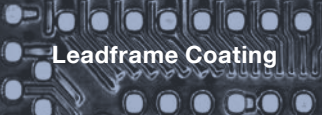


- + Flexible, robust and accurate R&D inkjet printer
- + Choice of industrial printheads
- + Advanced software metrology packages
- + Integrated drop and print vision systems
- + Printhead maintenance station
- + Large variety of optional features





ENABLING FUTURE TECHNOLOGIES

INKJET APPLICATION EXAMPLES

| Printed Circuit Board (PCB) | Semiconductor | Printed Electronics (PE) | Others |
|--|---|---|---|
|  Solder Mask |  Passivation |  Metallization |  Pharma |
|  Solder Dam |  Photo Resist |  Encapsulation |  Micro Etching |
|  Etching Mask |  Leadframe Coating |  Multilayers |  Sensor Activation |

MAIN FEATURES

Choice of Printheads

- + Konica Minolta, Xaar, Fujifilm Dimatix, Canon
- + For wide range of applications

Accurate Motion Platform

- + 5-axis movement
- + Precise substrate alignment

Printhead Maintenance

- + Wiping, purging and capping
- + Drop view and fast nozzle scanning



Advanced Metrology Software

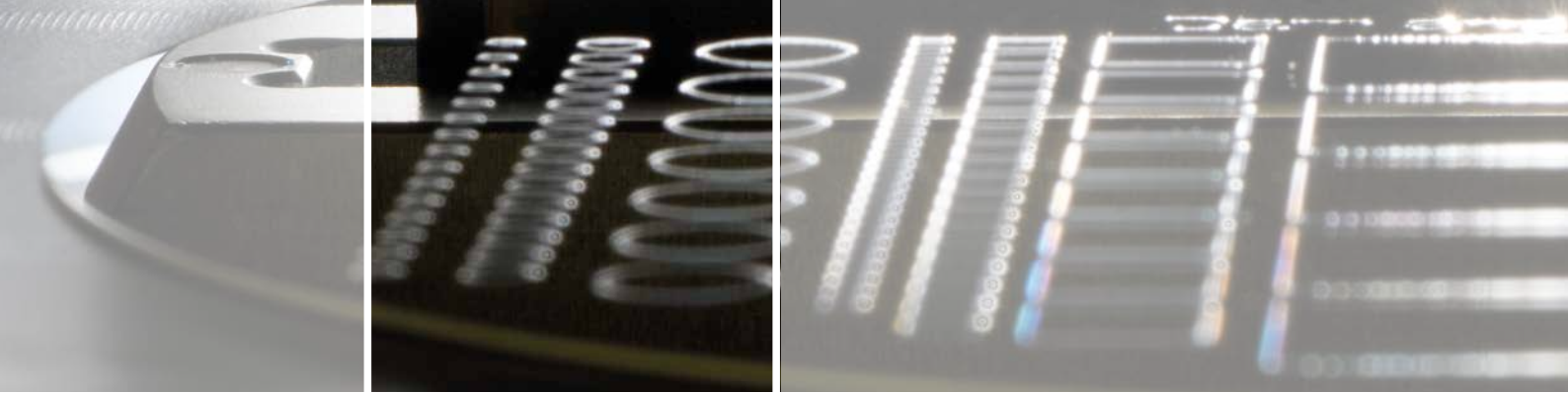
- + Advanced Drop Analysis for best jetting performance
- + Automated Print Optimization for best print settings

Variety of options

- + Integrated UV pinning
- + Chuck heating and cooling
- + Ink heating and recirculation
- + Dual ink supply
- + Customized substrate holders

Exchangeable Printhead Module

- + Fast and accurate printhead exchange
- + Quick change between inks

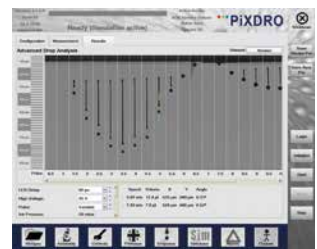


VARIETY OF ENHANCEMENTS

VERSATILITY ENABLING MANY APPLICATIONS

ADVANCED METROLOGY SOFTWARE

Automated software applications save significant research time and yield highest quality. The Advanced Drop Analysis (ADA) feature enables fully automated multi-dimensional research of ink drop formation for best ink jetting performance. Automated Print Optimization (APO) unlocks the full potential of the printer by providing fast access to optimal print settings for best application results.



A WIDE SELECTION OF PRINTHEADS

| SUMMARY OF PRINTHEADS | | |
|-----------------------|--------------------|------------------------|
| Research Phase | Development Phase | Pilot-production Phase |
| DMC SAMBA | KM512 | KM1024i |
| Spectra-S | KM512 UV pinning | KM1024i UV pinning |
| Spectra-S dual | KM1024i | Q-Class |
| Spectra-S hotmelt | KM1024i UV pinning | Canon C29 |
| KM512 | Q-Class | Samba G3L |
| KM512 UV pinning | Canon C29 | Samba G3L UV pinning |
| | | Xaar 1003 |
| Software Options | | |
| ADA | ADA | ADA |
| | APO | APO |
| | Adv. Gerber | Adv. Gerber |

DMC SAMBA PRINTHEAD CARTRIDGE MODULE

Cost effective process research with the disposable printhead cartridges.

KONICA MINOLTA PRINTHEADS

KM512 and KM1024i printhead series with inline UV LED pinning module. Precise printing and pinning in one movement.

SAMBA G3L PRINTHEAD AND RECIRCULATION MODULE

Most advanced functional inkjet technology for extremely precise and fast printing.



SUSS LP50

TECHNICAL DATA

| GENERAL INFORMATION | |
|---------------------------------------|---|
| Max. Substrate Size | 227 x 327 mm |
| Max. Substrate Thickness | 25 mm |
| Substrate Chuck | Vacuum clamping |
| Substrate Temperature Control | Heating up to 90°C (optional cooling down to 4°C) |
| Motion | X, Y, Z Rotation of substrate table and printhead |
| Print Speed | Up to 500mm/s |
| Printheads | 12-2,048 nozzles; 2.4-80pL drop size |
| Printhead Exchange Time | few minutes, kinematic calibration |
| Printhead Maintenance | Purging, spitting, capping, wiping |
| Vision Systems | Drop view and print image view |
| Operation | Intuitive HMI |
| Image Formats | Bitmap, postscript, PDF |
| Ink Types | Solvent based, nanoparticle, aqueous, hotmelt, UV-curable |
| Ink Viscosity | 2-20 cP |
| Ink Supply | Header tank, typically 15mL |
| Advanced Drop Analysis (Option) | Automatic calculation of drop volume, speed and angle |
| Automated Print Optimization (Option) | Test print patterns to determine best process parameters |
| Intergrated Post Processing (Option) | UV pinning |
| Footprint (W x D x H) | Approx. 770x620x410 (excl. PC and monitor) |
| Weight | Approx. 90kg |

| ADVANCED PRINTING CONTROL | |
|--|---|
| Open software for setting print parameters | Print simulator Pulse shape, voltage and length Ink and substrate temperature Resolution (dpi) Swath and drop sequencing Nozzle offset compensation Individual nozzle allocation Bitmap oversampling Meniscus pressure Jetting frequency |

| SOPHISTICATED HUMAN INTERFACE | |
|-------------------------------|--|
| Intuitive User Access | Print parameter settings Process recipes Camera views Motion control |
| Work Flow Sequencing | Combine recipes and printing settings Repetitive printing at different positions Automatic printhead maintenance |

Data, design and specification depend on individual process conditions and can vary according to equipment configurations. Not all specifications may be valid simultaneously. Illustrations, photos and specifications in this brochure are not legally binding. SUSS MicroTec reserves the right to change machine specifications without prior notice.

NORTH AMERICA

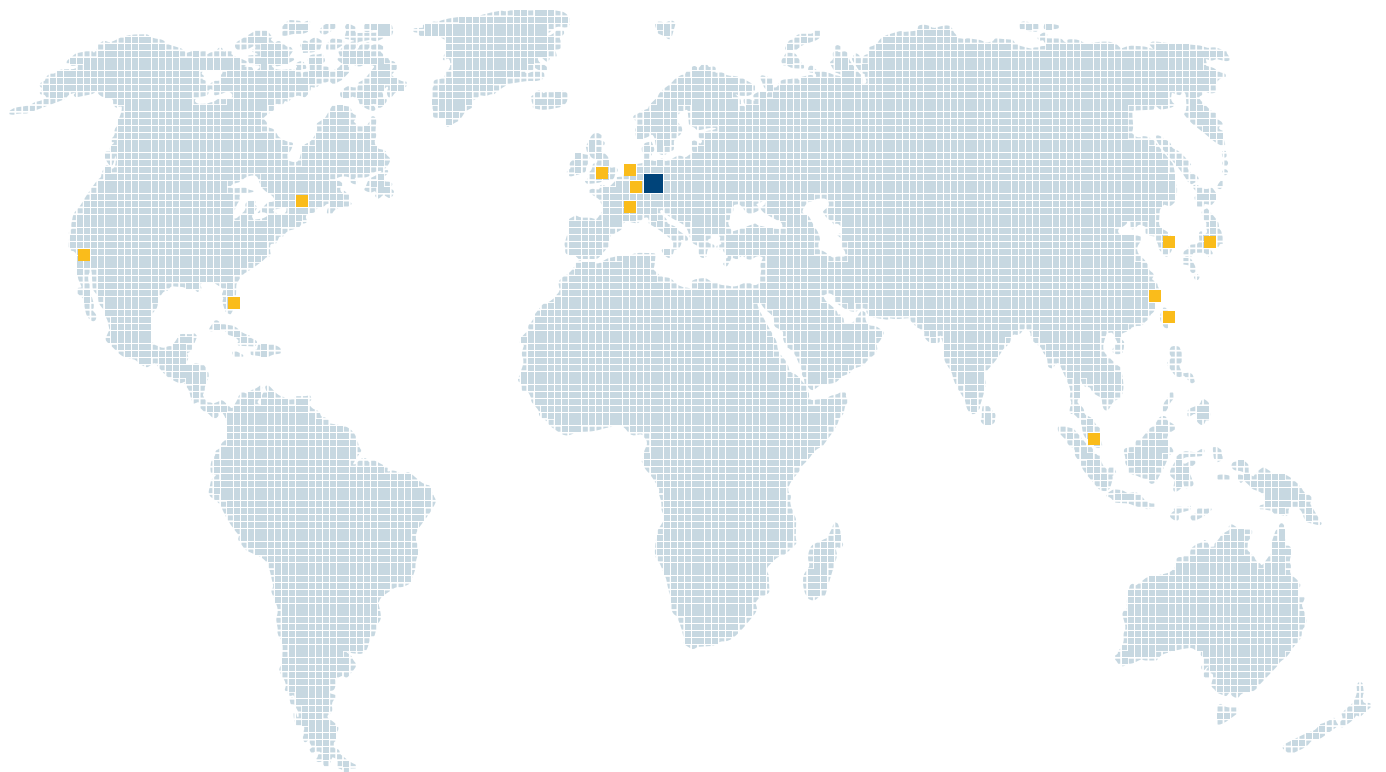
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