

MACHINES & AUTOMATIONS FOR ELECTRONIC

PRODUCTS OVERVIEW 2022

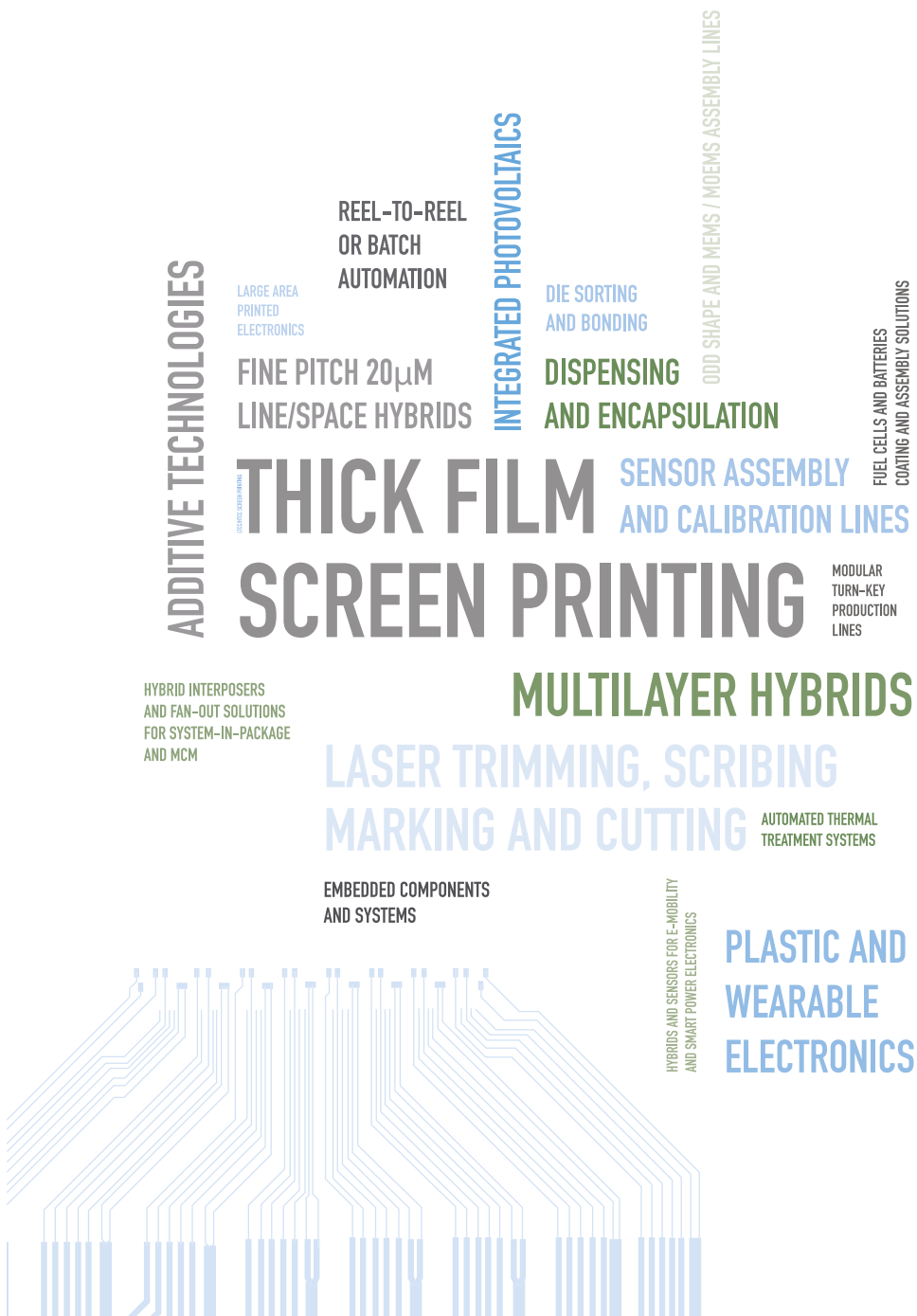
**THICK FILM
SCREEN PRINTING**

**CONVEYOR &
STATIC OVENS**

**OHMIC & FUNCTIONAL
LASER TRIMMING**

**SENSORS ASSEMBLY
& CALIBRATION LINES**

**CUSTOM WORK CELLS
& AUTOMATIC LINES**



Since 1970, Aurel has been designing and producing machines and automations for electronic and microelectronic production.

The wide product range includes machines for the manufacturing of hybrid circuits in thick film technology, printed electronic on flexible, heaters on steel, special assembly, calibration and inspection of sensors and power circuits.

MISSION

To realize robust and reliable equipments and automations in both standard and custom configurations in order to meet our customers requirements from the lab scale for R&D and prototyping to the massive production volumes for industry applications.

To envision the future of automation in order to propose to all our customers not only simple machines but performing solutions for their processes.

ABOUT US

Established	1970
Sector	Electronic & Microelectronic
Employees	101
Engineers	25
Turnover (2018)	16 Mil EUR
Plant size	4.600 mq
Certification	ISO 9001

AUREL SCREEN PRINTERS

MODELS OVERVIEW & OPTIONS



C1010D



C920



VS1520A



VS1520M



VS2025

Max Print Area	160 x 160 mm	400 x 350 mm	400 x 300 mm	150 x 150 mm (larger on request)	790 x 600 mm
Max Screen Size	10" x 10"	21" x 21"	15" x 20" Option 21" x 21"	15" x 20" Option 21" x 21"	39" x 39"
Vision System Repeatability	Not available	±0.001 mm	±0.001 mm	±0.001 mm	±0.001 mm
Global Repeatability	±0.020 mm	±0.020 mm	±0.012 mm	±0.012 mm	±0.020 mm
Alignment (Substrate/Screen)	Manual Alignment	Manual Alignment (Pro Align System Optional)	Automatic Alignment	Automatic Alignment	Manual Alignment (Pro Align System, Automatic Alignment Optional)
Print Parameters Adjustment (Pressure, Downstop, Print Gap)	Manual by micrometers	Manual by micrometers	Programmable by S/W	Programmable by S/W	Programmable by S/W
Substrate Loading / Unloading	Manual (Automatic from stack optional)	Manual	Manual	Automatic In-Line from magazine-to-magazine	Manual (Automatic In-Line optional)
Options	PHM and Via Filling	PHM and Via Filling Paste Reload Dispenser Pneumatic Screen Locking	PHM and Via Filling Paste Reload Dispenser Pneumatic Screen Locking 2D Post printing inspection Substrate cleaning system	PHM and Via Filling Paste Reload Dispenser Pneumatic Screen Locking 2D Post printing inspection Substrate cleaning system	PHM and Via Filling Paste Reload Dispenser Pneumatic Screen Locking

PHM: Programmable Hole Metallization

C1010D - FAST SCREEN/STENCIL PRINTER



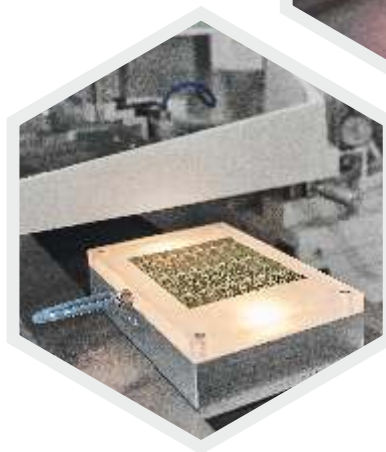
Aurel C1010D is a very fast screen/stencil printing machine with security cover that can print area up to 160 x 160 mm. C1010D grants the highest productivity for hybrid circuits standard sizes (up to 6" x 6"). C1010D can be equipped with exchangeable fixtures according to the substrate drawing with vacuum or mechanical clamping system.



PRINT HEAD WITH
SQUEEGEE & FLOOD BLADE



SCREEN HOLDER
ALIGNMENT
BY MICROMETERS



BACK-LIGHT
TABLE

MAIN FEATURES

- ⬢ PLC Control
- ⬢ Touch Screen Panel
- ⬢ Max screen size 10" x 10"
- ⬢ Print head with squeegee and flood blade
- ⬢ Motorized head with DC motor, speed and stroke adjustment
- ⬢ Digital reading of speed, pressure and parallelism
- ⬢ Controls of printing pressure, speed and printing delay
- ⬢ X-Y-Theta and Z adjustments with centesimal micrometers
- ⬢ Dimensions: 1850W x 855L x 1600H mm; 320 Kg

APPLICATIONS

- ⬢ Thick film and polymer pastes
- ⬢ Solder paste for SMT
- ⬢ Glues, adhesives, resins
- ⬢ Solder resists
- ⬢ LTCC and Via Filling
- ⬢ Sensor elements
- ⬢ Chip components



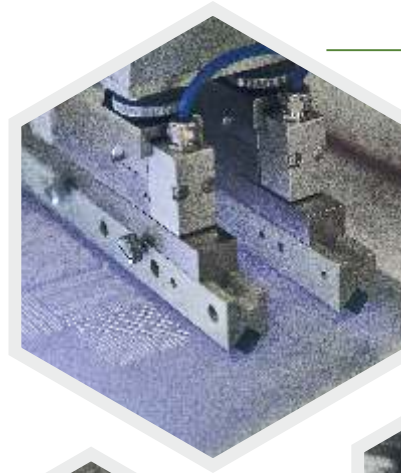
C920 - SCREEN/STENCIL PRINTER



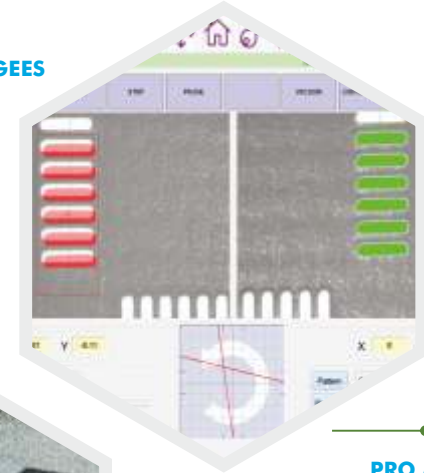
Aurel C920 is a high precision free stand screen/stencil printing machine with cabinet and security cover that can print area up to 350 x 400 mm, assuring uniform deposition from corner to corner.

This machine can be equipped with a ProAlign Vision system for the precise alignment between the substrate and the screen.

C920 is really versatile thanks to the possibility to easily exchange different fixtures according to the substrate size and type (acrylic or aluminium nest, micro-porous stone, multi-holes chuck, tool for cylindrical substrates).



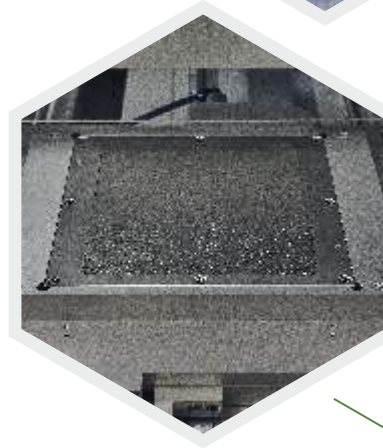
**INDEPENDENT
DOUBLE SQUEEGEE
HEAD**



**PRO ALIGN
VISION SYSTEM**



**WORK-TABLE
MANUAL ALIGNMENT
BY MICROMETERS**



**MICRO POROUS TABLE
FOR FLEXIBLE SUBSTRATE
& GREEN TAPE**

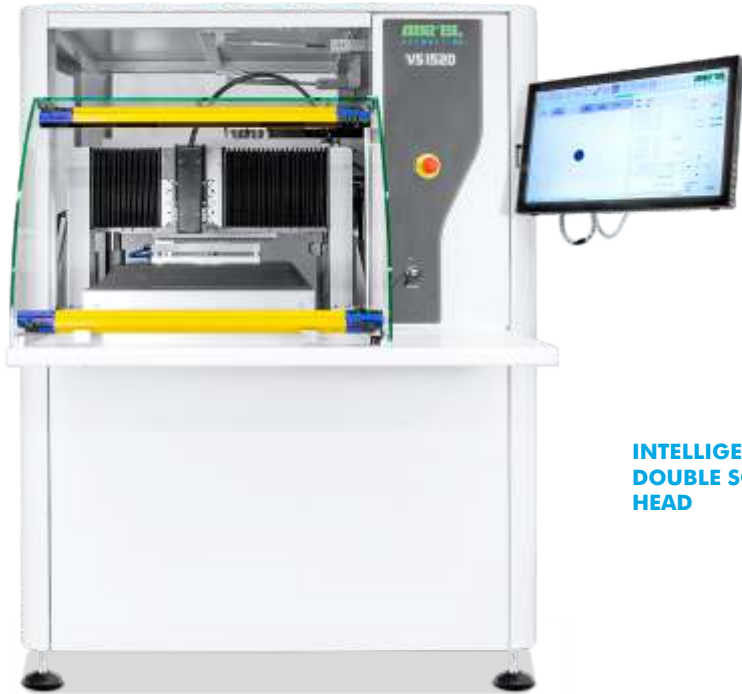
MAIN FEATURES

- ◊ PC Control, Windows © Operating System
- ◊ Wide Touch Screen Monitor
- ◊ Max screen size 21" x 21"
- ◊ Double squeegee head for rubber or metal squeegees
- ◊ Automatic Shuttle work table with linear motor
- ◊ Work recipes storing and data logging
- ◊ Controls of printing pressure, speed and printing delay
- ◊ Print gap measurement set
- ◊ Dimensions: 1100W x 1350L x 1500H mm; 400 Kg

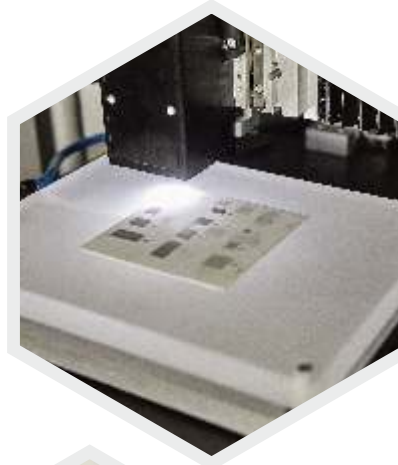
APPLICATIONS

- ◊ Thick film and polymer pastes
- ◊ Solder paste for SMT
- ◊ Glues, adhesives, resins
- ◊ Through holes metallization
- ◊ Solder resist
- ◊ Flexible foils, paper, PET film
- ◊ Solar cells, Semiconductors, Glass, Quartz
- ◊ Polymeric pastes
- ◊ LTCC and Via Filling
- ◊ Silver Sinter
- ◊ Cylindrical parts
- ◊ Heaters on metal substrates

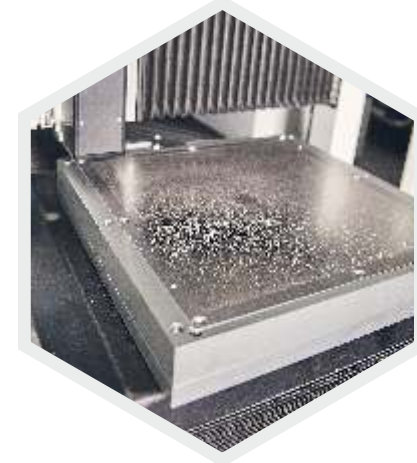
VS1520A - HIGH PRECISION SCREEN PRINTER



**INTELLIGENT
DOUBLE SQUEEGEE
HEAD**



**AUTOMATIC
VISION SYSTEM**



**MICRO POROUS TABLE
FOR FLEXIBLE SUBSTRATE
& GREEN TAPE**



Aurel VS1520A uses highly advanced mechanical and electronic solution to guarantee superior quality in fine-line printing for multilayer hybrids circuits. The automatic vision system ensures resolution better than 2 microns.

All the machine's movements are motorized and programmable by S/W through an user friendly menu. All the print parameters (pressure, speed, down stop, print gap) are programmable and storable in work recipes to grant the minimum setup time.

MAIN FEATURES

- ◊ PC Control, Windows © Operating System
- ◊ Wide Touch Screen Monitor
- ◊ Max screen size 15" x 20" (option 21" x 21")
- ◊ Double squeegee head with programmable squeegee up/down movement
- ◊ Work recipes storing and data logging
- ◊ Programmable print parameters (printing stroke, pressure, print gap & down stop)
- ◊ Automatic work table in X-Y-Theta axes
- ◊ Dimensions: 1440W x 1350L x 1700H mm; 700 Kg

APPLICATIONS

- ◊ Thick film and polymer pastes
- ◊ Multilayer Hybrids
- ◊ Solder paste for SMT
- ◊ Glues, adhesives, resins
- ◊ Through holes metallization
- ◊ Solder resist
- ◊ Flexible foils, PET film, paper
- ◊ Solar cells, semiconductors, glass, quartz
- ◊ Polymeric pastes
- ◊ LTCC and Via Filling
- ◊ Silver Sinter
- ◊ Heaters on metal substrates

VS1520M - FULL AUTOMATIC SCREEN PRINTING LINE



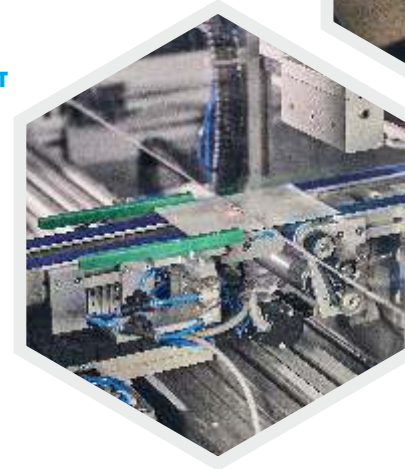
Aurel VS1520M is the full automatic screen printing version conceived with a modular approach that permits the customer to build up the line adding step-by-step additional modules according to the real production trend.

The basic configuration consists of a from cassette-to-cassette line with a high accuracy in-line screen printer platform VS with automatic vision system to grant the highest repeatability for multilayer circuits and throughput (up to 6 sec + print time)

APPLICATIONS

- ⬢ Ceramic substrates
- ⬢ Roll-To-Roll line
- ⬢ Foil-To-Foil line
- ⬢ SOFCs
- ⬢ Parts on carriers

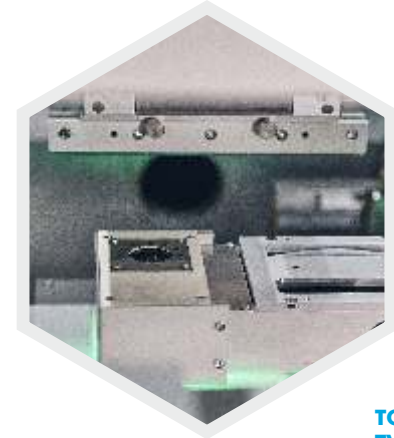
ROBUST IN-LINE TRANSPORT



CASSETTE MAGAZINE



TOP & BOTTOM TV CAMERA



MAIN FEATURES

- ⬢ PC Control, Windows © Operating System
- ⬢ Wide Touch Screen Monitor
- ⬢ Max screen size 15" x 20" (option 21" x 21")
- ⬢ Double squeegee head with programmable squeegee up/down movement
- ⬢ Work recipes storing and data logging
- ⬢ Programmable print parameters (printing stroke, pressure, print gap & down stop)
- ⬢ Automatic alignment between substrate and frame
- ⬢ Magazines: cassette to cassette or stack to stack
- ⬢ In-line transport for ceramic substrates, programmable width for different substrate sizes

VS2025 - LARGE AREA SCREEN PRINTER



**DOUBLE SQUEEGEES
HEAD PRESSURE CONTROL BY SW**



**MICRO POROUS TABLE
FOR FLEXIBLE SUBSTRATE
& GREEN TAPE**



APPLICATIONS

- ◊ Thick film pastes
- ◊ Solder paste for SMT
- ◊ Glues, adhesives, resins
- ◊ Membrane switch panel
- ◊ Solder resist
- ◊ Flexible foils, PET film, paper
- ◊ Polymeric pastes
- ◊ LED Panels
- ◊ Cylindrical parts
- ◊ Glass, quartz

MAIN FEATURES

- ◊ PC Control, Windows © Operating System
- ◊ Wide Screen Monitor and Industrial Keyboard
- ◊ Max screen size 39" x 39" (higher on request)
- ◊ Double squeegee head with programmable squeegee up/down movement
- ◊ Work recipes storing and data logging
- ◊ Programs and datas storing
- ◊ Programmable print parameters (printing stroke, pressure, print gap & down stop)
- ◊ Pneumatic screen locking system
- ◊ Dimensions: 1400L x 2100W x 1880H mm; 600 Kg

Aurel VS2025 is a high precision screen/stencil printing machine for large area substrates, up to 790 x 600 mm.

The accurate control of the printing pressure and the parallelism grants the highest deposition uniformity from corner to corner even with large area substrate.

All the machine's movements are motorized and programmed by S/W.

Special exchangeable fixtures are available for flexible substrates or long PCBs.

A206 - CONVEYOR DRYING/CURING OVEN



APPLICATIONS

- ◊ Thick film circuits
- ◊ Adhesives and coatings
- ◊ Resins and glues
- ◊ Polymeric pastes

Aurel A206 is a conveyor oven for drying thick film pastes and curing polymeric pastes, adhesives, resins, glues etc.

Far IR heating is the recommended way to dry and cure properly printed wet pastes, especially for thick film circuits.

Indeed, infrared heat waves penetrate first the core of the material, then dry outwardly to the surface, avoiding the typical "Dried skin effect" that can trap the solvents inside causing cracks in the further steps of the process.

MAIN FEATURES

- ◊ PDPI Digital thermoregulators (or PC Control, Windows © Operating System)
- ◊ Heating with Far IR ceramic panels
- ◊ Standard 4 zones (more zones on request)
- ◊ Conveyor belt in stainless steel, silicon, teflon/glass
- ◊ Special finger belt for double side printed substrates
- ◊ Conveyor width: 200 ÷ 1000 mm
- ◊ Temperature up to 300°C
- ◊ UV LED Curing area (option)



A600/360

A1100/30

A SERIES - STATIC BATCH OVEN & FURNACE

Aurel A Series are economical static batch ovens and furnaces designed for the typical thick film thermal treatments such as drying, curing, firing, thermal testing, aging.

These ovens are available either in free-standing or bench top versions and can be used in Scientific Laboratories, Research Institutes and Industries for prototypes and pre-series production.

MAIN FEATURES

- ◊ Volume: 20 ÷ 400 lt (higher volumes available on request)
- ◊ Temperature: up to 1100°C
- ◊ PID electronic thermoregulator with digital display
- ◊ PC connection interface and S/W for thermal profile set-up
- ◊ Forced convection air, ventilation hole and gas exhaust system available

ALS300 - LASER TRIMMER

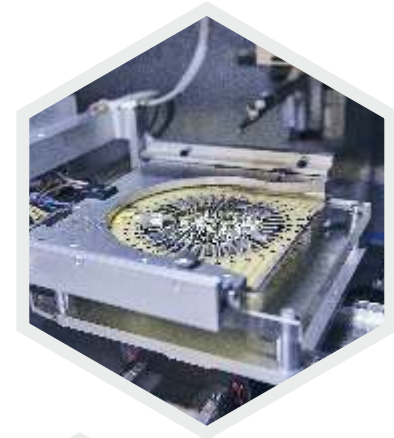
IN-LINE VERSION ALS300M



FLYING PROBES



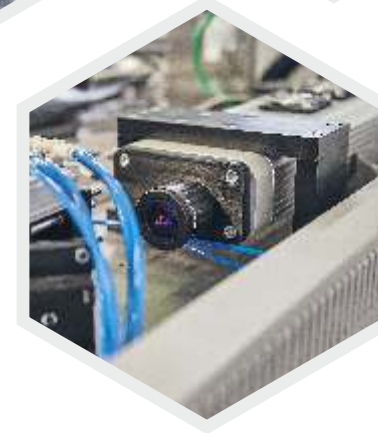
PROBE
CARD



STEP & REPEAT
TABLE



DIODE-PUMPED
LASER SOURCE
(INFRARED OR GREEN)



ALS300 series lasers can be used for Ohmic trimming of thick film and chip resistors and for active and functional trimming of hybrids, digital and RF circuits.

ALS300 lasers are offered either as a stand alone basic system, or with optional handling modules for integration into a customer's production line.

MAIN FEATURES

- ❖ PC Control, Windows © Operating System
- ❖ Wide Screen Monitor and Industrial Keyboard
- ❖ PSI Advanced Trim Sequence Program Mode
- ❖ Laser source: Diode Pumped (1064 nm, 532 nm) 3 ÷ 12 W
- ❖ Beam Positioning system: X-Y Linear Drive or Galvanometer
- ❖ Probing system: Flying probes or probes cars (double system on request)
- ❖ PRS Vision System for automatic substrate alignment
- ❖ Dimensions: 1000W x 1560L x 1660H mm; 850 Kg

APPLICATIONS

- ❖ Thick Film Hybrids Trimming
- ❖ Thin Film Hybrids Trimming
- ❖ Functional Trimming of SMD Resistors
- ❖ Ohmic and Functional Trimming

ALS200 - CO₂ LASER SYSTEM



Aurel ALS200 CO₂ Laser System is designed for high accuracy scribing, drilling and cutting of ceramics substrates for thin and thick film hybrid circuits up to 6" x 6" (typical Al₂O₃ and AlN).

ALS200 lasers are offered as basic system or with optional handling modules from/to stack or cassette magazine for high volume production.

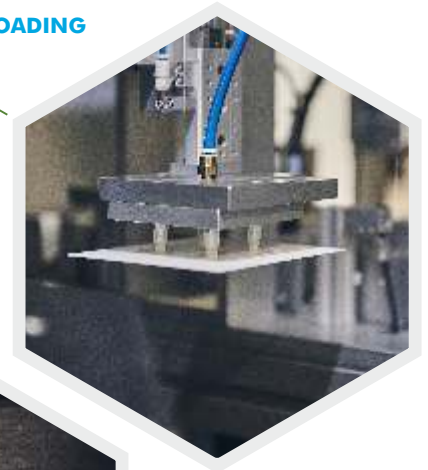
APPLICATIONS

- ◊ Cutting
- ◊ Scribing
- ◊ Drilling

MAIN FEATURES

- ◊ PC Control, Windows © Operating System
- ◊ Wide Screen Monitor and Industrial Keyboard
- ◊ Max working speed 500 mm/s
- ◊ X-Y linear drive work table, max stroke: 300 x 300 mm
- ◊ Double nozzle head with automatic switching: one for cutting and one for scribing
- ◊ Factory service free with easy gas cartridge replacement
- ◊ PRS Vision System for automatic substrate alignment
- ◊ Dimensions: 980W x 2620L x 1800H mm; 1500kg (with manual loading)
- ◊ Dimensions: 1460W x 2620L x 1800H mm; 1700kg (with loader/unloader)

**AUTOMATIC
LOADING / UNLOADING**



**DOUBLE
NOZZLES HEAD
FOR SCRIBING &
DRILLING**



XCEL SERIES (VERSATILE WORK CELL) STAND ALONE OR IN-LINE VERSIONS



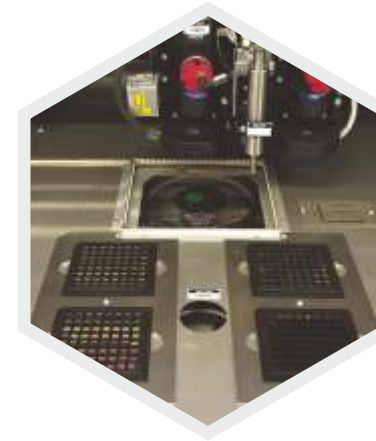
AUREL XCEL Series is a versatile free standing work cell based on a Cartesian platform with linear drives that allows fast and highly precise movements.

XCEL is offered either as a stand alone unit or integrated in a line with automatic handling modules for high volume production.

Multiple tools can be used in parallel in combination with high resolution vision system with PRS for a perfect alignment and a pre/post process inspection.



LASER
MICROMACHINING



SILICON DIE
INSPECTION & SORTING



IN-LINE MULTIFUNCTIONAL XCEL
FOR DISPENSING AND ASSEMBLY
ON DCB SUBSTRATES FOR
POWER MODULES

MAIN FEATURES

- ⬢ PC Control, Windows © Operating System
- ⬢ Wide screen monitor and Industrial Keyboard
- ⬢ Work Recipes Storing and Data Logging
- ⬢ X-Y linear drives, max stroke 450 x 500 mm, speed up 600 mm/sec
- ⬢ DC Motorized Z-axis, max stroke 50 mm, speed up to 50 mm/sec
- ⬢ Holder for up to three different tools in parallel
- ⬢ Dimensions: 1000W x 1300L x 1450H mm (stand alone version)

APPLICATIONS

- ⬢ Dispensing
- ⬢ Ink-Jet and Paste Jet
- ⬢ Spray Coating
- ⬢ Odd shape / Pick&Place
- ⬢ AOI
- ⬢ Die Inspection & Sorting
- ⬢ Laser Micromachining
- ⬢ Automated Assembly

AH SERIES - HANDLING SYSTEMS

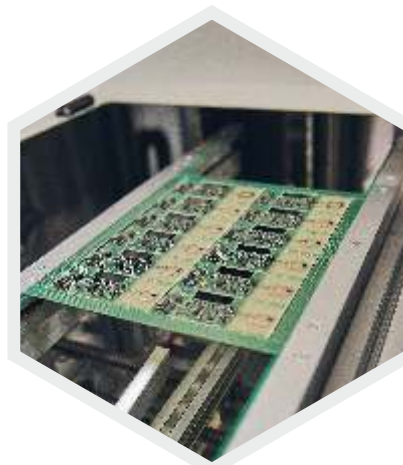


Handling Systems for fully automatic loading, unloading and transportation of PCBs and ceramic substrates, designed according to SMEMA standard.

They can be easily connected with several machines as Pick & Place, Screen Printing Machine, Laser, Reflow, Testing Machine, etc.

AH150 Series are fully automatic loading / unloading equipments for ceramic substrates from/to cassette or stack magazines

AH500 Series are fully automatic loading / unloading equipments for PCBs.



PCB
CONVEYOR

CASSETTE
MAGAZINE
FOR CERAMIC
SUBSTRATES



CASSETTE
MAGAZINE
FOR PCBs

FULL AUTOMATIC LINES

The new generation AUREL Automatic Lines are conceived with a modular approach that permits the customer to build up the production line starting from a first base line and to add step-by-step additional modules according to the real production trend.

AUREL Automatic Lines are designed to grant the highest throughput and to minimize the human factor reducing the setup and the product changeover times in order to achieve the maximum OEE.

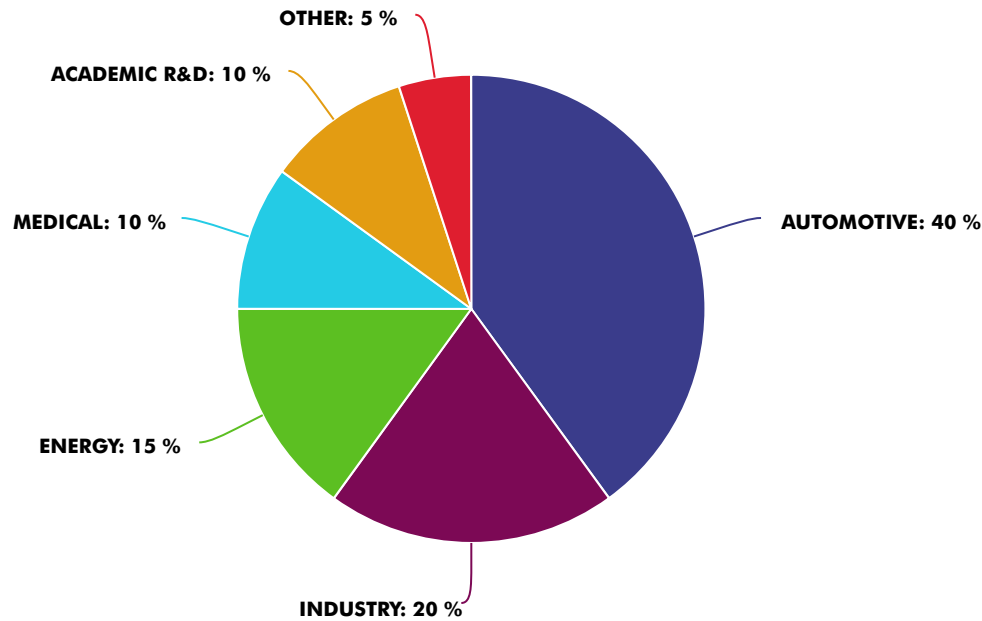
APPLICATIONS

- ◇ Thick Film Screen Printing
- ◇ Fine Line Thick Film Screen Printing
- ◇ Functional and Active Trimming of Hybrids, Sensors and RF circuits
- ◇ Digital Calibration of ASIC modules with Pressure & Temperature Chambers
- ◇ Custom Assembly
- ◇ Turn-key Manufacturing Solutions

- 1 Automatic Loader from Stack or Magazine
- 2 Precision Hybrid Screen Printer
- 3 Handler / Collocator
- 4 IR + Convection Dryer
- 5 Handler / Collocator with PRS
- 6 High Intensity UV Exposure
- 7 Automatic Unloader to Stack or Magazine



Example of New Generation Aurel Line for Fine Line Thick Film Screen Printing



FUTURE IS NOW

Perfect interaction between man, machines and company network.

- ⬢ PC CONTROL
- ⬢ DATA LOGGING SYSTEM
- ⬢ SMART USER INTERFACE
- ⬢ REMOTE ACCESS FOR MONITORING
- ⬢ ON LINE DISPLAY

industry **4.0**

ADDITIVE TECHNOLOGIES

FUEL CELLS AND BATTERIES
COATING AND ASSEMBLY SOLUTIONS

LARGE AREA
PRINTED
ELECTRONICS

FINE PITCH 20µM
LINE/SPACE HYBRIDS

REEL-TO-REEL
OR BATCH
AUTOMATION

INTEGRATED PHOTOVOLTAICS

DIE SORTING
AND BONDING

DISPENSING
AND ENCAPSULATION

ODD SHAPE AND MEMS / MOEMS ASSEMBLY LINES

**LASER TRIMMING, SCRIBING
MARKING AND CUTTING**

MODULAR
TURN-KEY
PRODUCTION
LINES

MULTILAYER HYBRIDS

**THICK FILM
SCREEN PRINTING**

**AUTOMATED THERMAL
TREATMENT SYSTEMS**

HYBRID INTERPOSERS
AND FAN-OUT SOLUTIONS
FOR SYSTEM-IN-PACKAGE
AND MCM

**PLASTIC AND
WEARABLE
ELECTRONICS**

EMBEDDED COMPONENTS
AND SYSTEMS

**SENSOR ASSEMBLY
AND CALIBRATION LINES**

HYBRIDS AND SENSORS FOR E-MOBILITY
AND SMART POWER ELECTRONICS

How to reach us



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