KAWA GmbH
Leiterplattentechnik / Industrievertretung

ALTIX
Direct Imaging & Contact Printers

FACTORY REFURBISHED
SECOND HAND (2014)

SEMI-AUTOMATIC PHOTO EXPOSURE UNIT
Collimated Light 8 kW (or 5 kW)
Automatic CCD Optical Alignment
AFOSA ies

”Pictured: ies version”

1/ DESCRIPTION

1-1 / PHOTO EXPOSURE UNIT

AFOSA *ies* **SEMI-AUTOMATIC PHOTO EXPOSURE UNIT**
8 kW with optical alignment (5 kW in option)

Semi-automatic photo exposure unit with optical registration dedicated to the following process:

- Inner layers (Front to Back Alignment)
- External layers (Image to Panel Alignment)
- Solder Mask

CHARACTERISTICS:

Panels	Single or double side (see * for solder mask mode). Max: **610** x 534 mm Min : **460** x 305 mm *Others sizes, see options in chapter 2-2* Thickness: 50 µm to 4 mm Free area on the panel reference edge : 8 mm Panel reference: front left angle or front right angle (front angle = angle on the front side of the machine)
Artworks	Silver and diazo with punched service holes (pre-registration,…)
Process	**Inner** layers, **External** layers, **Solder** Mask (*) (**) (*) single side mode (**) double side if primary images processed with a full optical CCD alignment exposure unit.
Resist/Solder mask	All common types of dry film or Solder mask (recommended 250mJ max for 5 kW lamp).
CCD alignment	4 CCD cameras on the lower side Full automatic movement of CCD cameras in x, y
Registration	- The registration is "full optical". (Possibility to detect the hole target covered with dry film optional) - Alignment artworks/artworks : +/- 15 µm (at 3 σ after vacuum) - Alignment artworks/panel : +/- 25 µm (at 3 σ after vacuum)
Drawers	Double drawer system with automatic opening and movement
Cycle Time	- +/- 2 panels/min (for I/L, depending on the operator and process)
Lamp cooling system	Air cooling system, 1100 m3/h, Close loop cooling system for the room temperature balance optional.
Vacuum	Vacuum level: 2000 mm. H2O
UV. Source	- Source : one lamp 8kW collimated (or 1x5kW optional) - Collimation Angle : 1.5° max

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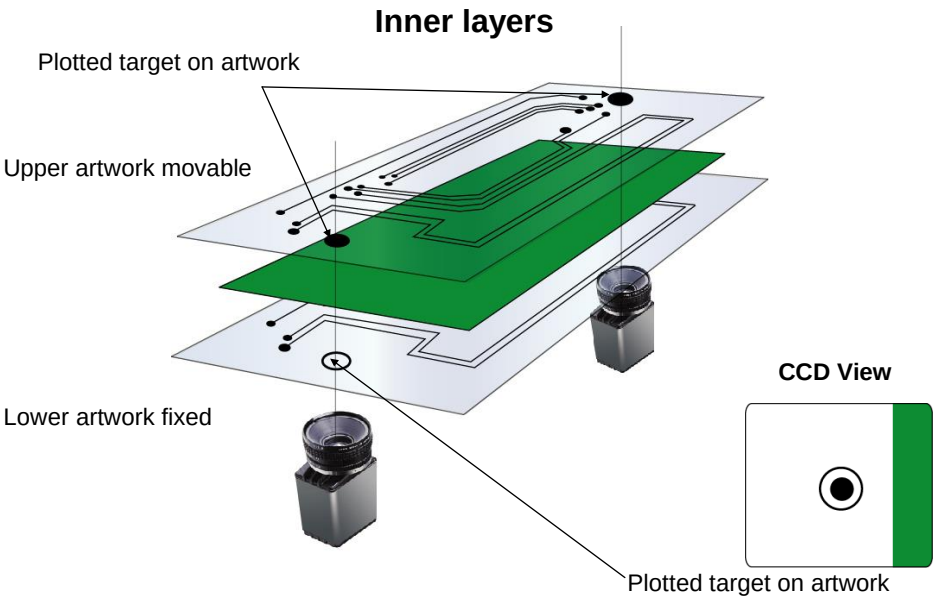
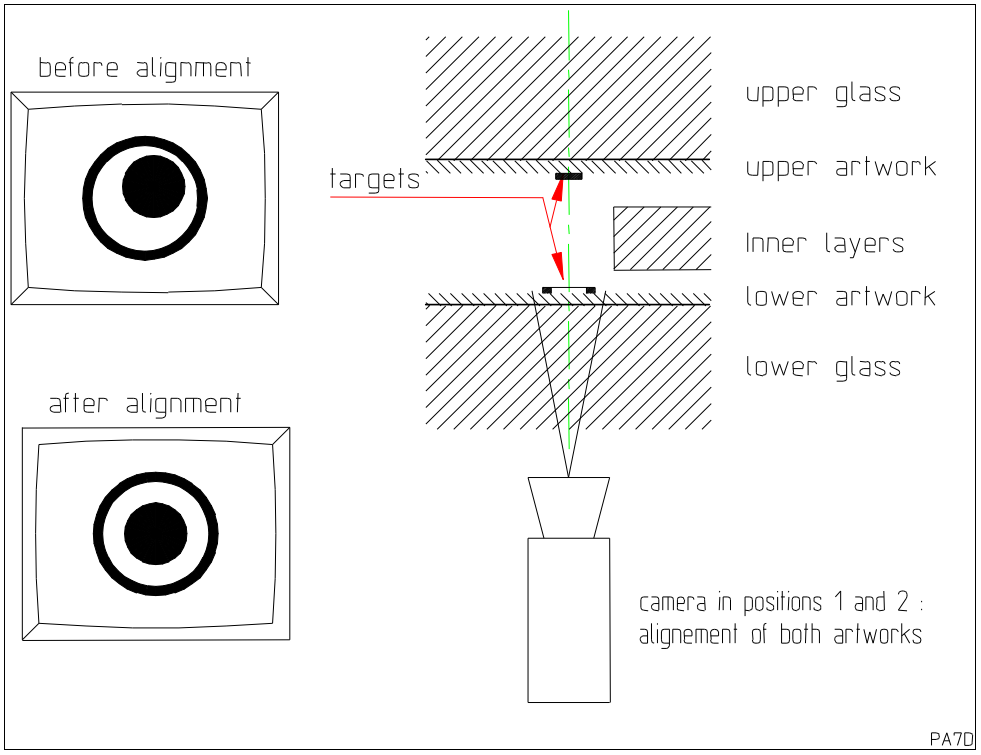
	- Declination Angle : 1° max - Light uniformity : +/- 85 % - Light energy on panel: • with 8kW lamp :45 mW/cm2 (18x24'') • with 5kW lamp :28 mW/cm2 (18x24'') - Working modes: « Time » or « Energy ». (1) These results are measured by a UV meter IL 1400 (International Light) and a UV cell referenced XRL140B
Cleanliness	- Over pressure with Hepa Filter class 100. - No generation of dust
Operator Interface Controller	- Color Touch screen LCD TFT 15'' - PC inside the machine : - Events logging system - Trouble shooting on line - Standard languages: English, French, German…
Definition line/space	50µm/50µm (dry film thickness max 38 µm, depending on process)
Dimensions	WxLxH : 1,650 x 3,385 x 2,080mm
Maintenance	Trouble shooting and assistance on line, with explanation to solve problems Easy accessibility for maintenance people (pneumatics, electricity, …)
Power supply	6 kW / 400 v / 3 phases, 50/60 Hf
Air supply	6 to 7 bars – 1 500 l / mn

Above values are available for a machine working in normal industrial conditions and respect of preventive maintenance. Some of our customers get better results with optimization of general process.
These performances are given for a machine working in the required conditions, with the required maintenance and with 200 hours working lamp.

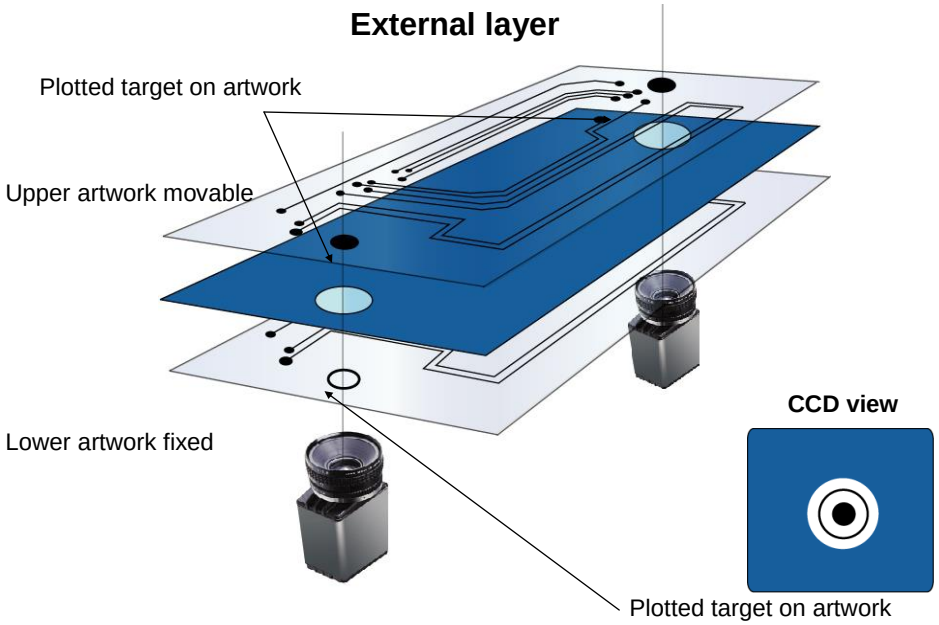
1-2 / OPTICAL REGISTRATION

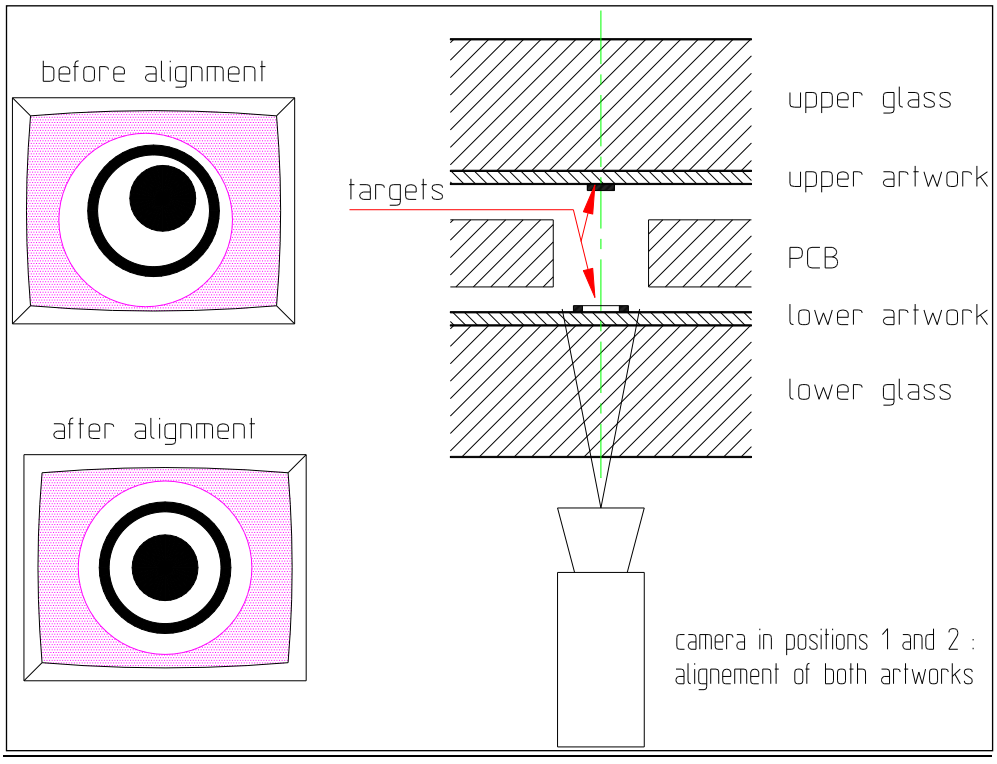
Optical registration for ‘’inner layers’’ mode
Example for 2 CCD cameras



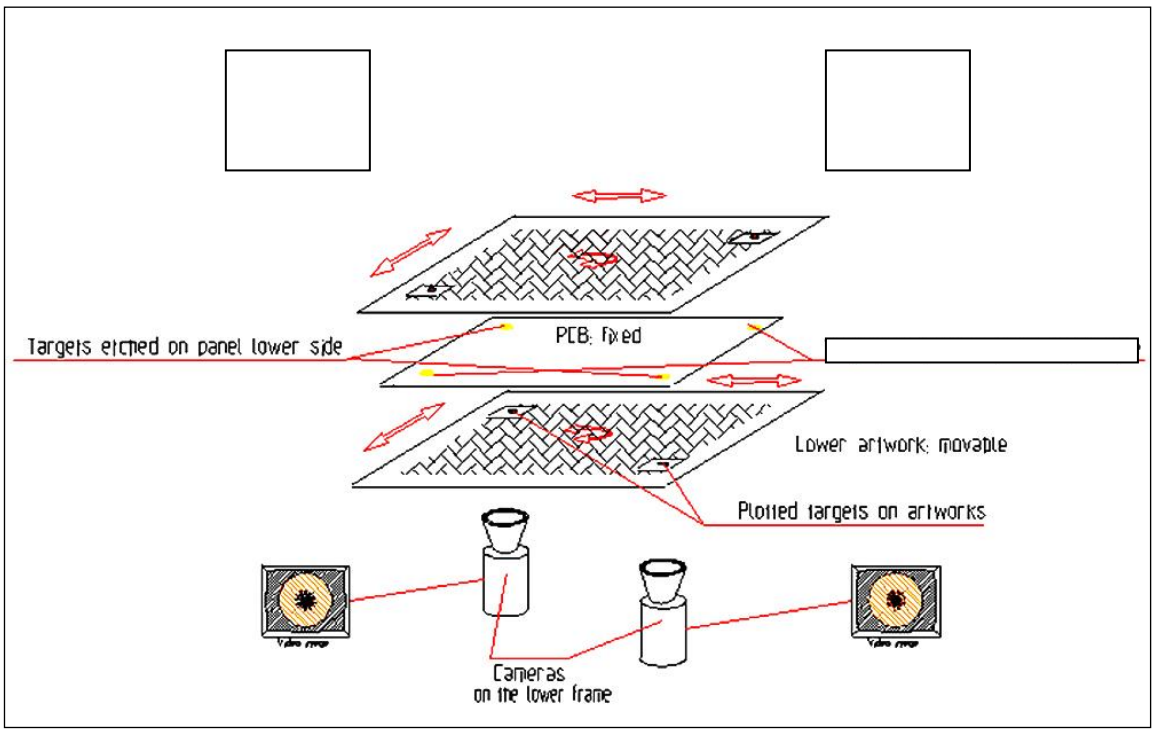


Optical registration for ‘’external layers’’ mode
Example for 2 CCD cameras





Registration on copper targets for Solder Mask



Process description:

The 2 or 4 lower cameras are looking to the copper etched fiducials on the bottom side of the PCB.
Since no cameras on the top, there is no alignment from the top artwork to the copper etched fiducials on the upper side of the PCB

So, this process can be used in single side mode.

When using double side, it is mandatory that the primary images must be done at an earlier step with a full optical CCD alignment exposure unit. Thanks to the fact that the top and bottom artworks have been aligned together and move together around the panel which is fixed.

1-3 / USER INTERFACE

EVENT LOGGING SYSTEM

- Our “Event Logging System” is a simple and intuitive user interface based on Windows objects and concepts.
- All events are recorded in several files and stored for one complete year before being automatically deleted.
- The “events” page allows display of all of the events that occur on the machine. It is possible to filter them according to time, type, group or priority, to print or export them into a file with a standard database format.
- All of the parameters are automatically retrieved from the PLC memory : no input is required from the operator.
- Two kinds of pages are used to get information about production and unit status :
  - The “production” pages allow display of the batches that have been worked during a period previously defined by the operator (from 1 second to 1 year). It is then possible to select a specific batch and display the parameters of all corresponding worked panels.
  - The “status” page is used to display the time spent by the unit in the different status, during a period previously defined by the operator (from 1 second to 1 year). Statistics are computed to determine opening time, down time, uptime… of the machine.
- Three kinds of pages are used to get information about maintenance :
  - The “defaults” page gives summary of the occurred defaults by subsets, during a period previously defined by the operator (from 1 second to 1 year). It is possible to zoom on a specific group to get statistics about its own defaults (number and duration, for example).
  - The “16 most frequent defaults” page gives the 16 main defaults occurred during a period previously defined by the operator (from 1 second to 1 year).
  - The “variable trends” page is used to display trends of the main machine variables in real time.
  - On-line help available for all of the referenced defaults for production and maintenance. This help is displayed thanks to Microsoft Internet Explorer and has been written in HTML format, in order to add pictures or videos to the text.
- Automatic printing of a report for every batch, relating, for every worked panel :
  - Results of video alignment,
  - Statistics about the following parameters: average, minimum, maximum,…

All defaults occurred during production.

2 / PRICE TABLES

2-1 / PHOTO EXPOSURE UNITS

AFOSA *ies*-CA8 – Semi-automatic photo exposure unit full CCD alignment

Description	
High quality collimated light	
Inner and external layers mode **+ Solder mask mode**	
Cold light (for artworks preservation)	
Full optical alignment 4CCD	
Full automatic cameras pre-positioning to targets	
Artworks hold by vacuum	
High quality hardened frame (glass/glass)	
High vacuum level	
High vacuum homogeneity (4 corners)	
Dual drawers system with full automatic open/close function	
Interface with 15” colour touch screen	
Multi-language interface	
Integrated “trouble shooting system”	
Event logging system	
Hepa filter class 100 with over-pressurized exposure area	
Integrated options:	
AF 3100 IP connection for Tele-Maintenance	
AF 5300 Panel holding device with 4 pins instead of 2 (for 2 drawers)	
AF 1400 Chilled water close loop air recirculation lamp cooling system	
AF1480 Top & bottom glass cooling including 1 heat exchanger recommended with soldermask process (>300mJ)	

2-2 / OPTIONS (Non-Included)

VARIOUS		
Items	**Description**	
AFOSA-5kW	ColliLight **5kW** – Low Consumption Optimized for Dry Film Resist	
AFOSA-PANEL	Others panels size than *Max: **610** x 534 mm* *Min : **460** x 305 mm*	