

HIGH PERFORMANCE

PCB Soldermask Spray Coating Line for medium volume production

TYPE SC – 1800

(Second hand / single-sided – Year of Construction: 2003)

Refurbished

Consisting of:

1) Spray Coater with heated top spray gun, step transport and programmable spraying system included a spraying cabinet

Typ SYS-SC-650

2) Semicure Dryer with pin chain transport including

Flash-off - Semi-cure- and Cooling Zone

Typ SYS 4000

Frame Data

PCB size: min. 300 mm x 300 mm

max. 610 mm x 2.000 mm

PCB-thickness: 0,8 – 10 mm

Capacity: approximately 0,8 meter / minute

Painting: cream white RAL 9001 and stainless steel

1.) Spray Coater with heated top spray guns, step transport and programmable spraying system included a spraying cabinet

Typ SYS-SC-650

Technical Description:

- spray coating station within a sealed stainless steel cabinet for easy cleaning
- glass viewing panels allow visual checking of the spraying process
- constant air exchange circulation to prevent build-up of fumes and solvent vapors
- the spray coater system uses preheated spray gun unit design with high speed linear drive motor for precise control of the spray position
- the spray gun is heated in the ink delivery shaft to heat up the ink just before spraying, which reduces the viscosity of the ink to an ideal level
- as the ink is sprayed onto the PCB, it is atomized and returned to room temperature which increases its viscosity as it is deposited onto the PCB for complete coverage of the PCB and encapsulation of the highest traces
- in the spray area, PCBs are supported on the pin chain conveyor
- the PCB is transported on the pin chain along the X-axis – the spray gun is moving within the Y axis for a very simple and robust design that provides the most consistent coating quality
- the PCB dimensions and spray pattern are simply input onto the PC for precise spraying accuracy and minimal overspray
- solder-mask ink tank with overpressure and filters
- spray-coating cabinet with overspray-reductions-filter, glassdoors and exhaust fan.

Function:

Inlet and Transport

- PCBs are placed on the pinchain-transport-system transfer the spraying chamber.
- The PCB is transported through the airspray units and to the output from the spraying chamber and transported direct into the dryer.

Spraying

- The spray gun delivers an atomized spray pattern and integrated heaters within the ink delivery shaft to heat up the ink at the spray nozzle to 40-60 degrees C to lower the ink viscosity for optimal spraying effect
- The spray gun moves along continuously back and forth along the Y-axis according to the input program and sprays onto the PCB as it is transported on the pin chain across the spraying chamber.
- The spray nozzle is programmed with an automatic blow and clean function to prevent any build-up of ink residue in the nozzle tip.
- The spray pattern can be programmed to repeat as many times as necessary in order to deliver the exact coating thickness over the highest traces.

2.) Semicure Dryer with pin chain transport including Flash-off - Semi-cure- and Cooling Zone

Typ SYS 4000

Technical Description:

High Performance Throughfeed-Dryer for PCBs with compact construction design. The PCB-Dryer consists of:

- Machine body
- Transport system
- Process zone
- Cooling zone

The **Machine Body** is made of anodized aluminum section supporting the process zone and the top cover. The cover is heat-insulated and soundproofed and is hinged for opening.

The **Transport System** consists of vertically mounted pin or grip chain. The conveyor is adjusted in width on one side. The adjustment is done centrally via a cardan shaft and gear. The pin or grip chain runs on stainless steel rails to minimize particulates and reduce maintenance.

The system is driven by a infinitely variable adjustable three-phase current gear motor providing smooth performance at 0,2 – 2,0 m/min speeds.

The double walled, insulated **Process Zone** is made entirely of stainless steel and containing 8 heating zones for maximum temperature uniformity and process window.

The **Flash off zone** are directly at the entry of the heating chamber provides a greater rate of air exchange to extract the solvents that are outgassed immediately after the coating is applied. It avoids any “skinning” of the coating by carefully controlling the laminar airflow in the first zone. Skinning prevents normal evolution of solvents and can lead to opens if not controlled.

The **heating zone** includes a combination of different convection-heated air: The exhaust of the process zone takes place through the built-in, adjustable dampers, whereby the air is fed behind the process muffle and through the roller coater cleanroom cabin and exhausted before the process muffle. The process muffle has its own exhaust system of controlled convection air. Fans and filters are built-in. This guarantees clean room operation in compliance with class 1000.

The Cooling Zone is equipped with a compact cooling module with air condition module. The entire system is designed for use of class A2 solvents and higher.

PC-Control :

The control system is integrated within the machine baseframe and operates on the PLC PC-principle.

All of the requisite safety facilities, such as safety thermostate, residual-currentoperated circuit-breaker, belt run monitoring, etc. are integrated. Installation and wiring conforms to VDE and CE (UL-application available).

The PC and Windows** display makes the system very easy to operate and it can be easily understood.

All setpoint and actual temperatures, operating statuses, conveying speeds, stored programs and management data are clearly displayed on screen and may be altered on the keyboard without difficulty.

Any number of programs may be stored to hard drive and/or FD disk. A visual alarm signal is given in the event of the system falling below or exceeding freely selectable tolerance limits.

Any irregularity of machine parameters, program changes, production standstill, etc. is given on the printer and/or FD disk in message form, comprising date, time, program number, operator.

Current production data and protocols, may also be stored in text form on any production batch. The computer program is also equipped with software protection involving code word input at several operating levels.

System status is shown on a three-coloured all-round light fitted to the system.

green = standby
yellow = not ready, limit value
red = malfunction

The PC hardware used reflects the state of the art.

** Windows - registered trademark of Microsoft, Inc., USA

Technical Data:

Working width:	max. 610 mm min. 300 mm
Type of chain:	stainless steel pin or grip - chain
Transport Speed:	0,2 – 2,0 meter /min. adjustable
Input height:	900 mm
Process height clearance:	25 mm
Flash-off Zone:	1500 mm
Process Zone:	3500 mm
Cooling Zone:	1000 mm
Total length, incl. spraycoater:	9250 mm
Total width:	1000 mm

Total height:	1600/2200 mm
Input Air:	at the outlet in airflow direction on the left side
Exhaust Air:	through Flash-off zone
Control Panel-Keyboard	at the outlet in airflow direction on the right side
Connection:	400 V 50 Hz 3 Phase approx. 70 kW
Input Air:	through filter approx. 1800 m/h
Exhaust Air:	approx. 2000 m/h